BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. HP07-001

IN THE MATTER OF THE APPLICATION OF TRANSCANADA KEYSTONE PIPELINE, LP FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY CONVERSION AND TRANSMISSION FACILITY ACT TO CONSTRUCT THE KEYSTONE PIPELINE PROJECT

Direct Testimony of John Muehlhausen on Behalf of the Staff of the South Dakota Public Utilities Commission

October 31, 2007

BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DIRECT TESTIMONY OF JOHN MUEHLHAUSEN

Q: Please state your name and business address.

A: John Muehlhausen of Merjent, Inc. of 615 First Avenue Northeast, Suite 425, Minneapolis, Minnesota 55413.

Q: Please briefly describe your post-high school education and work experience.

A: I have bachelor of arts degree in anthropology from the University of Wisconsin-Madison. I am a senior analyst at Merjent, Inc. I am also a founding partner and the chief financial officer of Merjent, Inc. I have 16 years of experience preparing various types of assessments of pipeline expansion and maintenance projects throughout the United States.

Q: Please describe the work of Merjent, Inc.

A: Merjent is a professional consulting company specializing in the pipeline and electric transmission line market segments. Merjent offers its clients project planning, permitting, evaluation, community relations, and environmental inspection services. Merjent staff have experience on thousands of miles of pipeline projects throughout the United States. Merjent represents both industry clients and regulatory agency clients.

Q: What is the purpose of your testimony?

A: Merjent was retained by the staff of the South Dakota Public Utilities Commission to prepare a quantitative assessment of the socioeconomic effects of the construction and operation of the Keystone Pipeline Project. I was the principal author of the socioeconomic assessment. I have personal experience preparing and/or technically editing socioeconomic analyses for several pipeline projects over the past dozen years,

including, most recently, an assessment of a 160-mile-long pipeline in Colorado published by the Federal Energy Regulatory Commission in its Environmental Impact Statement in August 2007.

Q: What methodologies did you use to determine socioeconomic impacts?

A: Two methods were used to gather socioeconomic information for this assessment. The first method involved research and documentation of existing literature regarding socioeconomic conditions of the counties that would be impacted by the project. The second method involved interviews with county commissioners to help identify important economic activities in the project area and to identify socioeconomic concerns of the counties. In some cases, commissioners have not yet responded to our interview requests despite our repeated attempts to contact them.

To estimate overall impacts on economic output, earnings, and employment, I conducted a simple regional input-output analysis using RIMS II multipliers purchased for the project area from the United States Department of Commerce, Bureau of Economic Analysis. The regional input-output analysis was based on estimated final-demand changes for goods and services to be purchased locally. A change-in-bill-of-goods analysis was not conducted because of a lack of data regarding the specific goods and services. Nonetheless, the final-demand analysis provides a reasonable supposition of economic impacts that could be expected from the proposed project.

In addition to analyzing overall economic impacts, the assessment considered some of the socioeconomic issues raised by stakeholders in the public hearing held by the Commission at the end of June. Focusing on some of these concerns allow us to better target mitigation toward the impacts with which the public is most concerned. The

assessment did not evaluate TransCanada's justification for the project or evaluate project alternatives, such as different routes or alternative energy sources.

Q: Please summarize the findings of your assessment, which is titled "Socioeconomic Assessment of the Keystone Pipeline", is dated October 29, 2007, and is attached to this direct testimony.

A: The proposed project would have both beneficial and adverse impacts on the socioeconomic conditions of the counties crossed by the pipeline as well as South Dakota in general. Most of the impacts would be insignificant. Those adverse impacts that have potential to be significant could be mitigated by following the recommendations identified in the assessment.

Construction of the proposed pipeline would result in up to 1,020 non-local workers and 255 family members temporarily moving into the communities around the project area during the peak of construction. Relative to the current population, the proposed influx of non-local workers and family members would not be significant, and would amount to only about one-third the population loss of the counties due to rural flight since 2000. After construction, Keystone would hire three employees locally to support operation of its pipeline, and there would be no long-term impacts on population.

During construction, the proposed pipeline would result in additional economic output, earnings, and jobs. For every $1.00 spent in South Dakota by TransCanada in the project area, an additional $0.70 of indirect and induced output would be expected in South Dakota. TransCanada is planning on spending about $93.2 million locally for construction of the pipeline. Therefore, an additional $65.2 million of indirect and induced output would be expected in other industries. The largest outputs would be felt

by the construction, retail trade, and health care industries, as well as the accommodations and food services industries.

During operation of the pipeline, for every $1.00 spent in South Dakota by TransCanada in the project area, an additional $0.33 of indirect and induced output would be expected in South Dakota. TransCanada is planning on spending about $11.0 million annually during operation. Therefore, an additional $3.6 million of indirect and induced output would be expected. The largest outputs would be felt by the utilities, construction, and transportation and warehousing industries.

In general, additional economic output is considered a beneficial impact because it results in additional jobs and wages. During construction, the proposed project could result in up to an additional 825 jobs, either directly or indirectly, and wages at least 10% higher than the ten-county median. During operation, 61 direct and indirect jobs could be created. However, as demand for labor rises, so can labor costs. For economic output to be considered beneficial, increases in revenues must exceed increases in costs. The labor supply and number of unemployed in the counties crossed by the project are greater than the number of additional jobs created by the project, and labor costs in the industries most affected by the project are less than one-third revenues, suggesting that the net economic impact of the project would be beneficial.

The proposed pipeline would affect approximately 2,169 acres of cropland. Short-term impacts associated with construction would include loss of standing crops within the construction work area valued at about $550,000. On an individual basis, TransCanada indicated it would compensate farmers for crop loss the year of construction, and provide a reduced compensation for two years following construction

with the understanding that crop yields may be diminished in subsequent years. Compared to the 2.7 million acres of cropland in the counties crossed by the pipeline, the acreage of cropland taken out of production would be insignificant. After construction, agricultural areas, including the permanent right-of-way, would be allowed to revert to former agricultural use.

One potential shortcoming of TransCanada's crop-loss compensation package would be the potential for farmers to have yield losses greater than the compensation amounts provided by TransCanada for the years following construction. TransCanada did indicate that they would conduct yield monitoring upon landowner request. However, we believe that landowners may not be aware that they can request yield monitoring, especially two or more years after construction. Therefore, we recommended that:

- **TransCanada monitor the yield of agricultural lands and hay fields impacted by construction, except where monitoring is waived by the landowner in writing. Monitoring shall be conducted until the area is successfully restored to yields which are similar to adjacent portions of the same field that were not disturbed by construction. TransCanada shall compensate the landowner for reduced yields at market rate until the area is successfully restored.**

During construction, non-local workers would demand many of the same goods and services as tourists. For example, construction workers would utilize hotels, motels, restaurants, and drinking establishments that are also commonly used by tourists. The increase in demand for accommodations and food services would normally be considered

a positive economic impact, but also could be considered a negative impact if demand creates upward pressure on the cost of labor or the price of rooms, or if non-local construction workers crowd out and displace traditional users. Such impacts are not expected to be significant or widespread and would be temporary in nature if they do occur.

Perhaps the most important tourist activity in the counties crossed by the proposed pipeline is hunting. Eastern South Dakota is especially known for pheasant hunting. Each year thousands of hunters visit the counties crossed by the pipeline for pheasant hunting from late October to early January. Construction would be winding down as the hunting season is starting and only minimal impacts on hunting would be expected.

The only designated recreational area directly affected by the proposed pipeline would be the Missouri River, which has been designated a National Recreational River. TransCanada is proposing to install the pipe under the river using horizontal drilling technology such that the bed, banks, or water quality of the river or areas within the National Recreational River administrative boundary would not be affected. Therefore, the project would not result in adverse impacts on the river or associated recreation.

County commissioners were contacted to determine if there were any special events in the project area that could be affected by construction. The county commissioners did not identify any special events that would require special coordination as of the date of the assessment. However, we noted that Beadle County hosts the state fair in early September each year, and while the influx of non-local workers could result in increased fair attendance and revenue, it could also increase competition for limited fair resources, such as campsites. Because the future of the fair is still somewhat

uncertain and the influx of workers has potential to both positively and negatively impact the fair, we recommend that:

- **TransCanada coordinate project activities with fair administrators so as to best make use of fair resources for traditional users as well as construction workers.**

The proposed project does not cross commercially or industrially developed land in South Dakota, although it also passes within about 2,000 feet one quartzite quarry in McCook County. It also crosses a few farmsteads and approaches a few areas of suburban residential development. Impacts of construction on residences could be significant on a site-specific basis, and might include noise and dust generated by construction equipment, limited access to property, increased traffic and congestion on nearby roads, and loss of valuable trees and landscaping. Communicating information about project schedules, employing appropriate safety procedures, and restoring affected areas can mitigate these impacts. Therefore, we recommended that:

- **TransCanada prepare and submit to the South Dakota Public Utilities Commission for review and approval a residential mitigation plan to:**
  - **a. coordinate construction work schedules with affected residential landowners prior to the start of construction;**
  - **b. maintain access to all residences, except for brief periods essential to pipe-laying as coordinated with affected residential landowners;**
  - **c. installing temporary safety fencing to control access and minimize hazards associated with an open trench in residential areas;**

d. notifying affected residents in advance of any scheduled disruption of utilities and limit the duration of any interruption to the smallest time possible;

e. repairing any damages to property that result from construction activities; and

f. restoring all areas disturbed by construction to preconstruction conditions or better.

After construction, certain structures and uses would be prohibited on the permanent pipeline right-of-way, including construction of aboveground structures, construction of septic systems, planting or cultivation of trees, or quarry and mining activities. These restrictions would not necessarily restrict future development of a particular parcel of land, but could affect the physical layout of how the particular parcel is developed or the methods by which it is developed.

TransCanada has indicated that it would compensate landowners for a permanent easement based on the full market value of the land affected by the pipeline just as if it were purchasing the land in fee, and would compensate at half market value for areas that would be temporarily disturbed during construction but are not retained on a permanent basis. If an easement cannot be negotiated with a landowner, TransCanada may be able to obtain an easement by the use of eminent domain. In this case, the landowner would still be compensated by TransCanada, but the amount of compensation would be determined by the courts.

Frequently, property owners affected by pipeline projects are concerned about property devaluation caused by a permanent pipeline easement. A 2001 study of four

communities around the United States funded by the Interstate Natural Gas Association of America suggested that the presence of a pipeline had no significant impact on the sale price or demand for properties located along pipeline rights-of-way.

The project area has sufficient temporary housing to accommodate the expected influx of workers and family members. Most temporary housing is already serviced by existing utilities, such as gas, electric, water, sewer, solid waste disposal, and telephone. Construction of new utility lines or infrastructure to serve the temporary population influx (other than the electric transmission lines to serve the four new pump stations) would not be required.

Impacts on the existing school system are expected to be minimal. Due to the transitory nature of construction, most workers do not travel with school-age children. Because the peak of construction occurs during the summer months when school is not in session, the educational system would need to accommodate at most 6 children in each grade level during the beginning of the school year. The existing educational system should be able to accommodate this small influx of students. Further, this estimate is probably high because, more likely than not, school age children would return to their permanent residence outside of South Dakota at the start of the school year.

Most law enforcement in the project area is provided on a local level by city police departments or county sheriff departments. In 2006, the ten counties crossed by the proposed pipeline employed 130 full-time law enforcement officers in local sheriff and police departments. This equates to a ratio of 1 local law enforcement officer per 587 people. During the peak of construction, the ratio would be reduced slightly to about 1 local law enforcement officer per 597 people. To maintain the ratio of law enforcement

officers per person, 2 additional officers would be required during the peak of construction.

Historical data suggests that the influx of non-local workers on pipeline projects does not affect local crime rates. Department of Justice crime data for sheriff offices in fourteen counties crossed by a 380-mile pipeline project in Kansas and Colorado with a similar non-local workforce showed no discernable crime bump in 2004 attributable to construction. In fact, aggregate property crime reported by the sheriffs' offices was at its lowest rate compared to the four years preceding and one year following construction and violent crime was slightly lower than average.

As with local law enforcement, demand for firefighting or other emergency services would not be expected to increase dramatically during construction. The community infrastructure just a few years ago accommodated a larger population than the increase expected from the influx of workers. With crude oil pipelines, however, there is always a concern that a leak or incident during operation of the pipeline could require emergency response. TransCanada has developed a draft emergency response plan that is being reviewed for adequacy by the Public Utilities Commission.

In addition to an emergency response plan, federal regulations also require pipeline operators to establish public awareness programs to enable customers, the public, government officials, emergency responders, and those engaged in excavation activities to recognize a pipeline emergency and respond appropriately. According to TransCanada, it would implement a comprehensive integrated public awareness program consistent with that employed by TransCanada on all its pipelines in the United States. As part of its integrated public awareness program, TransCanada would educate

emergency response officials on the company's emergency response procedures and how the company would work with emergency responders during an emergency, and would involve local emergency responders in its training exercises.

The economic impact of a pipeline incident is impossible to predict and would depend on many factors, such as the volume of the spill, the particular type of crude oil spilled, the location of the spill, and the resources affected by the spill. Some incidents may be small or occur in safe locations with little impact, while others may be large or occur in unusually sensitive areas. Regardless of size or location of an incident, almost all incidents would result in additional economic output. However, economic output should not be confused with economic progress because, although cleaning up the leak may generate work, earnings, and spending, it would mainly benefit the clean-up company and would be at the expense of TransCanada, the affected landowner, and the environment. In any case, TransCanada indicated that it would be responsible for losses that arise from a leak on the Keystone Pipeline, including the clean-up expenses and property damages caused by the leak. If the leak were caused by a third party, it seems plausible that TransCanada might seek damages from the third party.

Although health care is readily available in the counties crossed by the proposed pipeline, there is potential for increased demand for emergency medical services to treat injuries from construction-related accidents. Based on accident rates for the construction industry and workforce estimates from TransCanada, about 8 construction-related accidents might be expected in 2008 and 14 construction-related accidents might be expected in 2009. Not all accidents would necessarily require medical attention. The counties and cities in the vicinity of the project appear have adequate health care services

to meet the emergency as well as routine health care needs of the community during construction.

South Dakota's road system serves as the backbone of the state's transportation system and carries the bulk of the state's commercial goods as well as personal travel. The movement of construction equipment, materials, and crew members to the project area would result in additional traffic on the roads in the counties crossed by the pipeline and in adjacent counties. According to county commissioners polled as of the date of the assessment, the existing road infrastructure would be sufficient to accommodate construction traffic, although heavier traffic and slower moving vehicles could be encountered by road users at various times. No new permanent roads would be constructed in South Dakota as part of the proposed project.

On a site-specific basis, impacts associated with installing the pipeline under roads would be temporary and minor and would not be expected to significantly disrupt traffic. Only eight gravel roads and no paved roads of the more than 175 road crossings would be closed and detoured for up to 48 hours each during the two years of construction. TransCanada would be required to obtain all state and local permits necessary to cross roads with the pipeline. It would be the responsibility of the state or local permitting authority to ensure that traffic flow would not be significantly impacted by road closures and that affected roads are restored to preconstruction conditions or better after construction. However, in the interest of public safety, we recommend that:

- **TransCanada coordinate road closures with state and local emergency responders (law enforcement, fire, and medical) and provide sufficient advance notice of road closures to appropriate response agencies.**

Hauling materials to and from the project site would very likely result in deteriorated roadbed conditions, particularly on gravel roads. We recommend that:

- **TransCanada implement a regular program of road maintenance and repair throughout active construction to keep paved and gravel roads in an acceptable condition for travel by the public. Following construction, TransCanada would be responsible for restoring deterioration caused by construction traffic such that the road is returned to its preconstruction condition or better. Repairs during and after construction would be consistent with federal, state, and local requirements.**

The project could also result in damage to roads from tracked vehicles crossing the roads as they move down the construction right-of-way or from heavy equipment tracking dirt and mud on roads, which may become a nuisance to local residents or cause slippery and dangerous road conditions. To minimize these potential problems, we recommend that:

- **TransCanada use rubber mats, tires, plywood sheets, steel plates or similar material to prevent damage to the road surface where tracked vehicles cross paved roads, and TransCanada install a combination of matting, culverts, and/or 50-foot-long crushed stone access pads at road crossings and other ingress and egress points to construction work areas to allow mud to fall off construction-related vehicles prior to leaving the work area. If excess soil or mud is tracked onto roadways, it should be shoveled or swept off immediately.**

South Dakota law requires and indemnity bond for projects such as this to insure that any damage beyond normal wear to public roads, highways, bridges, or other related facilities would be adequately compensated. We recommend that:

- **TransCanada obtain a bond in the amount of $3 million in 2008 and $12 million in 2009 to insure that any damage beyond normal wear to public roads, highways, bridges, or other related facilities would be adequately compensated. If project plans change such that a different bonding amount is warranted (*e.g.*, the construction schedule or spread lengths change), TransCanada would be required to inform the South Dakota Public Utilities Commission of such changes and propose a different bonding amount of Commission review and approval.**

The proposed project would be subject to 4% sales and use tax and 2% contractors' excise tax, for a total of 6% tax. Based on the taxable value of the project in South Dakota, the state would collect about $18 million from construction. Compared to statewide sales and use tax, the proposed project would result in only a small increase (about 2%) in state revenues. Spread over two years, the benefits would be less noticeable. Furthermore, the proposed pipeline may be eligible for a tax refund of up to 75%, thereby effectively dropping the tax rate to 1.5%, or $4.5 million.

During operation, crude oil shipped in the pipeline would not be retailed within the state; therefore, no sales or use tax would be generated by the product in the pipeline. However, the electricity and other goods and services purchased by TransCanada to operate its pipeline would be subject to a 4% sales and use tax. Electricity purchased

from local utilities would generate an about $404,000 of annual tax revenue; other goods and services could generate about $20,000.

Operation of the proposed pipeline also would be subject to *ad valorem* property taxes. The property tax rate charged in South Dakota varies by property type, by county, and by year. *Ad valorem* property taxes associated with the proposed project would increase countywide tax revenue between 2.6% and 13.7%, which is a significant benefit to the counties. The electric transmission lines associated with the proposed project also would be assessed *ad valorem* property tax. Electric transmission lines, however, only pay *ad valorem* property tax on real property (*i.e.*, land and buildings). Personal property is subject to a 2% gross receipts tax in lieu of property tax. It was assumed that no additional real property would be required for the electric transmission lines and all taxes would be gross receipts taxes. Gross receipts taxes were estimated at $282,000.

Indirect and induced spending associated with construction also would generate tax revenue for the state and local governments, primarily through sales and use tax. Additionally, other types of state taxation would be levied on certain types of spending, such as a 1% tourism tax on hotels and motels. Indirect and induced spending would generate about an additional $2.6 million in tax revenue during construction and $146,000 annually during operation.

In consideration of all the above facts, I have found that the proposed project, with incorporation of the recommended mitigation measures, would not, from a socioeconomic standpoint: 1) pose a threat of serious injury to the socioeconomic conditions in the project area; 2) substantially impair the health, safety, or welfare of the inhabitants in the project area; or 3) unduly interfere with the orderly development of the

region. I note that TransCanada would be required to comply with all applicable laws and rules during construction and operation of the pipeline.

Socioeconomic Assessment of the Keystone Pipeline

October 29

2007

TransCanada Keystone Pipeline, LP is proposing to construct and operate a crude oil pipeline that would extend across ten counties in eastern South Dakota. This assessment provides a socioeconomic impact analysis of the proposed construction and operation of the pipeline on those counties.

prepared by: John Muehlhausen
Merjent, Inc.

Socioeconomic Assessment of the Keystone Pipeline

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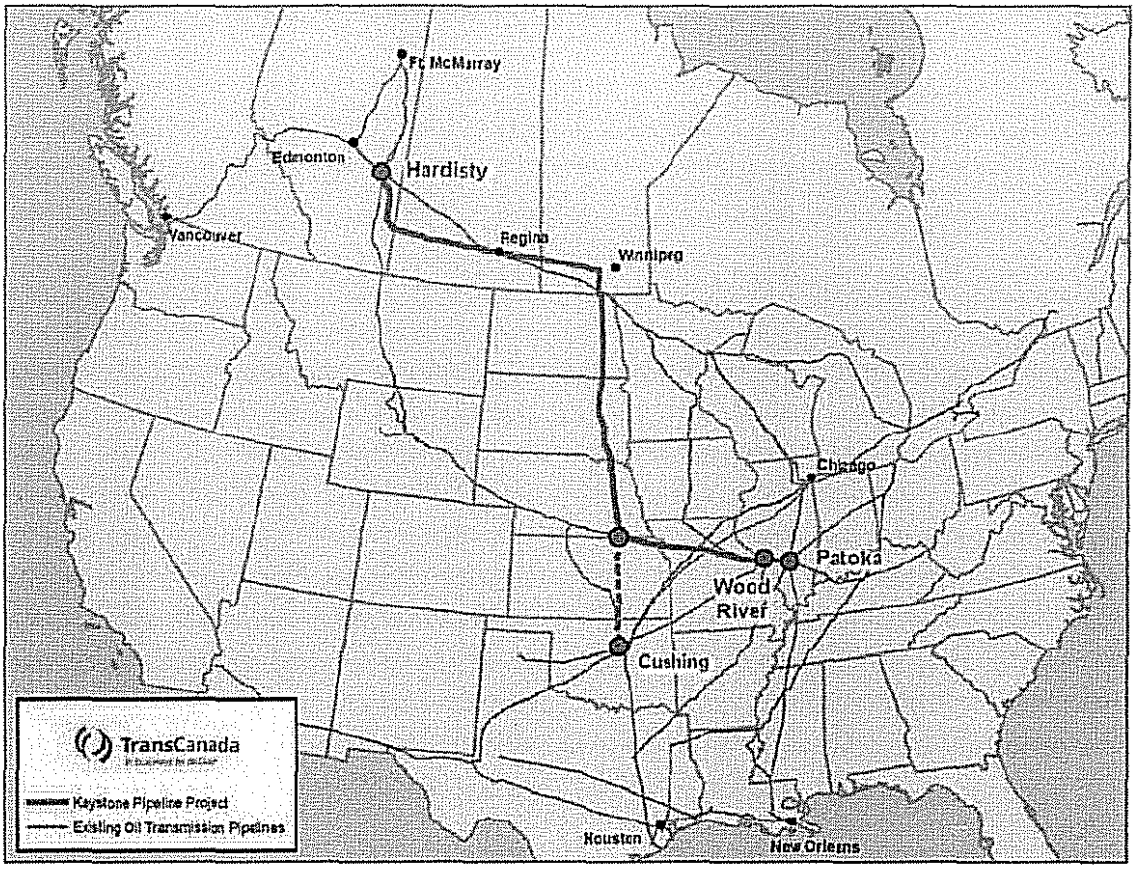
Socioeconomic Assessment of the Keystone Pipeline

Introduction

The purpose of this assessment is to provide a socioeconomic impact analysis of the proposed construction and operation of the Keystone Pipeline Project. TransCanada Keystone Pipeline, LP is proposing to construct and operate a crude oil pipeline system from an oil supply hub in Alberta in Canada to existing terminals in the Midwestern United States. The primary purpose of the project is to transport crude oil from the Western Canadian Sedimentary Basin into the United States to meet the growing demand by refineries and United States markets. In total, the Keystone Pipeline Project would consist of about 1,845 miles of pipeline, 38 pump stations, and numerous mainline valves and other aboveground facilities to be constructed in Canada and the United States (see Figure 1). The proposed facilities would have the capacity deliver up to about 591,000 barrels of heavy crude oil per day.[1]

Figure 1: Keystone Pipeline Project Overview Map



The United States portion of the project would cross North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Missouri, and Illinois. The United States portion of the project would consist of about 1,371 miles of pipeline, 23 pump stations, 52 mainline valves, and other various aboveground facilities. In South Dakota, the Keystone Project would consist of about 219 miles of pipeline, 4 pump stations, and 14 mainline valves (four of which would be at pump stations) (see Figure 2). Keystone proposes to begin construction in January 2008. Construction is expected to last 18 months and be completed in September 2009. The in-service date of the proposed facilities is November 30, 2009.[1]

In addition to pipeline facilities, Keystone estimates that 21 new electric transmission lines would be required to provide electrical power to the proposed pump stations. According to Keystone, approximately 149 miles of new electric transmission lines would be constructed in the United States, including about 63 miles in South Dakota. Electric transmission lines would be either 69-kilovolt, or 115-kilovolt and would be constructed by local utilities.[1]

Scope and Methodology

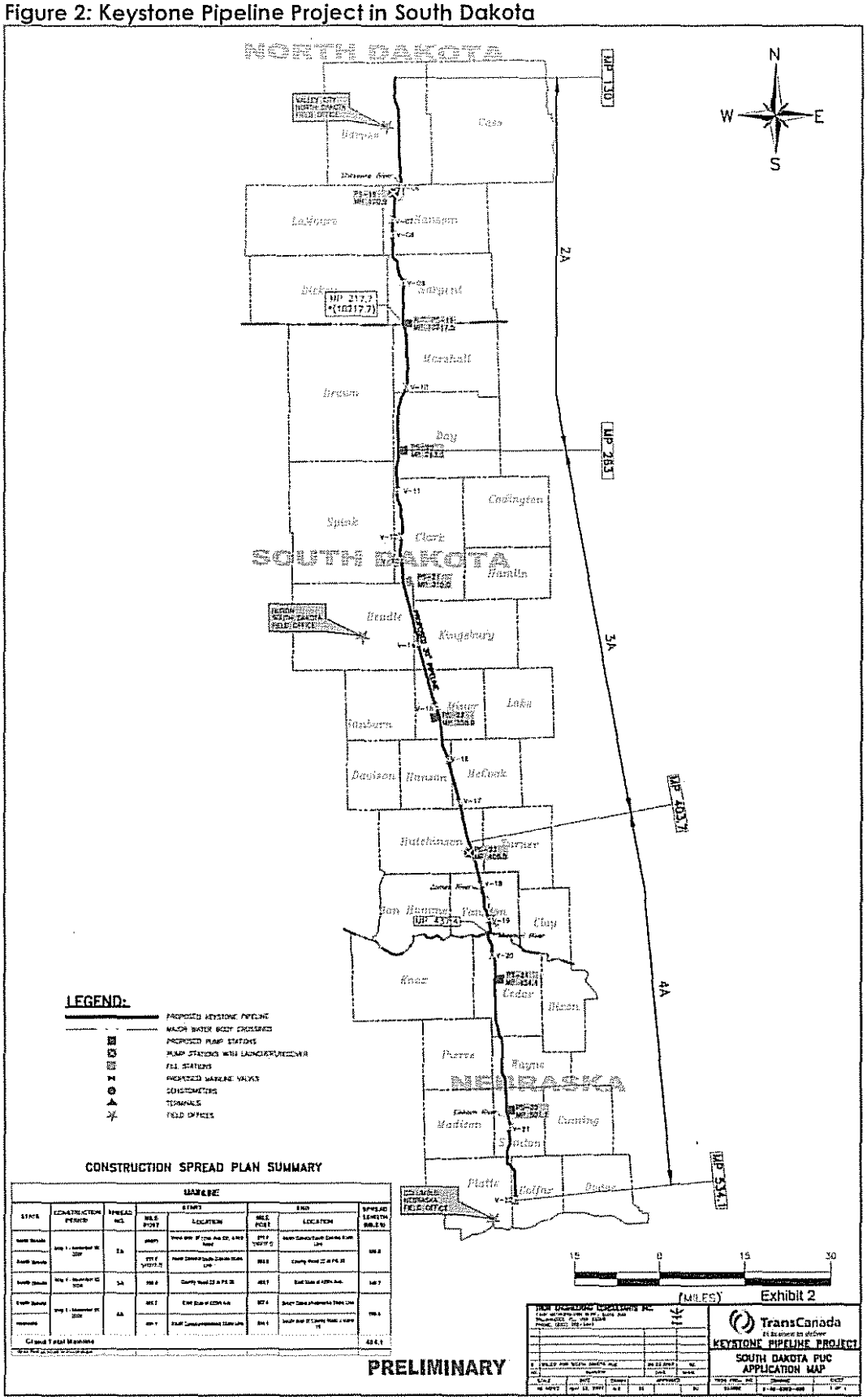
The geographic scope of this socioeconomic assessment is limited to South Dakota, specifically the ten counties crossed by the proposed project: Marshall, Day, Clark, Beadle, Kingsbury, Miner, Hanson, McCook, Hutchinson, and Yankton. Two methods were used to gather socioeconomic information for this assessment. The first method involved research and documentation of existing literature regarding socioeconomic conditions of the counties that would be impacted by the project. All sources are provided in the reference section of this document. The second method involved interviews with county commissioners to help identify important economic activities in the project area and to identify socioeconomic concerns of the counties. In some cases interviews were conducted over the telephone, and in other cases a written questionnaire was provided. In both cases, a fixed-question, open-response format was used for the interviews.

Although electric transmission lines will be constructed for the project, they are being reviewed independently of the proposed pipeline. Impacts associated with electric transmission line construction and operation were limited to discussions of impacts on employment, earnings, and overall economic output. The electric transmission lines would be located in seven of the ten counties crossed by the pipeline, and in Brown County as well.

Population

South Dakota is situated in the north-central United States and is usually considered to be a part of the Midwest, although the state is sometimes considered part of the Great Plains or the West. The Missouri River runs through the central part of South Dakota and divides the state into two socially and economically distinct halves, known to residents as "East River" and "West River."[2]

Figure 2: Keystone Pipeline Project in South Dakota



East River is the portion of the state of South Dakota located east of the Missouri River with about one-half of the land area and two-thirds of the population of the state. West River lies west of the Missouri River with about one-half of the land area but only of one-third the population. The state population was about 782,919 in 2006.[3] Although the state population has increased about 3.6% since 2000, it lags behind the national average of about 6.4%.[3]

The contrast between East River and West River is significant. East River is defined by fertile farm country. It is predominantly a corn, soybeans, and wheat growing region with large numbers of pigs and poultry. West River is defined by deep gorges and rolling plains. It is predominantly ranching with some dryland farming. Other than aggregates, all mining in South Dakota (including gold and other precious metals, industrial minerals, and iron ore) is located in West River, which includes the Black Hills.[4]

East River was settled largely by homesteaders moving west from Iowa and Minnesota, or immigrants directly by train from eastern United States seaports. West River was settled first by gold-seekers and miners; many from older gold rush locations such as Montana and Colorado, then followed by ranchers from Texas, Kansas, and Colorado. As a result, East River has a high Scandinavian and German-descended population and a culture quite similar to the Midwest; West River has a more general population and a culture similar to the Great Plains and West.[4] The Keystone Pipeline Project would be entirely in the East River region of South Dakota.

Despite an overall growing population, South Dakota is experiencing a trend of falling populations in rural counties. This trend is sometimes referred to as "rural flight." The effect of rural flight has not been spread evenly throughout South Dakota, and while most rural counties and small towns have lost population, the Sioux Falls area and the Black Hills have gained population. In fact, Lincoln County, near Sioux Falls, is the ninth-fastest growing county (by percentage) in the United States. The growth in these areas has compensated for losses in the rest of the state, and South Dakota's total population continues to increase steadily, although at a slower rate than the national average.[2] The proposed project would cross ten counties in South Dakota, all of which are experiencing rural flight and are sparsely populated. Population count, change, density, and various demographics for the ten counties crossed by the pipeline are provided in Table 1.

Within the counties crossed by the pipeline, countywide populations range from 2,553 in Miner County to 21,779 in Yankton County. The least densely populated

county crossed by the proposed project is Clark County, which has a population density of 3.8 people per square mile, or about one-third the average density on a statewide basis. The most densely populated county crossed by the proposed project is Yankton County, which has a population density of 40.9 people per square mile, or more than four times the average density on a statewide basis. By way of comparison, densely populated communities in South Dakota, such as Sioux Falls, have population densities in excess of 2,500 people per square mile.[5, 6]

Table 1: Population Data for the Keystone Pipeline Project

County Name	Population (2006)	Population Change (2000 - 2006)	Countywide Population Density (2006)	Minority Population (2000)	Disabled Population (2000)	High School Graduates (2000)	Bachelor's Degree or Higher (2000)
Beadle	15,643	8.1%	12.4	3.2%	13.7%	83.0%	18.3%
Clark	3,683	-11.1%	3.8	1.2%	15.6%	76.6%	11.4%
Day	5,778	7.8%	5.3	9.5%	13.1%	80.0%	15.4%
Hanson	3,690	17.6%	8.5	0.6%	16.6%	75.1%	14.0%
Hutchinson	7,426	8.0%	9.1	1.3%	15.5%	71.7%	14.1%
Kingsbury	5,464	-6.0%	6.3	1.4%	13.5%	82.3%	16.2%
McCook	5,851	0.3%	10.1	1.0%	14.1%	82.9%	16.3%
Marshall	4,430	-3.2%	5.0	7.7%	11.6%	75.6%	16.2%
Miner	2,553	-11.5%	4.5	0.9%	15.6%	79.6%	13.5%
Yankton	21,779	0.6%	40.9	5.0%	11.5%	86.1%	23.0%
Statewide	781,919	3.6%	10.1	11.3%	12.3%	84.6%	21.5%

Sources: 5, 6

Seven communities are within the immediate vicinity (2 miles) of the proposed project: Raymond, Iroquois, Roswell, Carthage, Emery, Spencer, and Yankton. The smallest community is Roswell, which has a population of 21. The largest community is Yankton, which has a population of 13,528. The median community population is represented by Carthage, which has a population of 187.[5, 6]

Pipeline construction typically proceeds with numerous crews working in an assembly line fashion. The survey crew begins construction, followed by the clearing crew, the grading crew, the trenching crew, and so on until cleanup is complete. As construction progresses, the workforce migrates down the construction right-of-way from one end of the construction spread to the other. A single pipeline may be divided into one or more construction spreads, with a separate construction crew working on each spread.

Keystone would utilize one construction spread in South Dakota in 2008 and two spreads in 2009. Keystone estimates that construction of the proposed project

would require a peak workforce in South Dakota of about 600 workers per construction spread. This equates to 600 construction workers employed on the project in 2008 and 1,200 workers in 2009.[1,7]

Keystone estimates that up to 15% of the workforce would be local hires and about 85% would be non-local. Therefore, during the peak of construction during 2009, up to 180 workers would be local hires and 1,020 workers would be non-local. Due to the transitory nature and short duration of pipeline construction, most non-local workers do not travel with their families. However, we know that some non-local workers do and, for the purpose of this assessment, we estimated that about 15% of non-local workers may bring their spouse or significant other, for an additional 153 people. It is less likely that non-local workers would travel with school age children. However, for the purpose of this assessment, we estimated that about 5% of non-local workers may travel with 2 school age children, for an additional 102 people. In total, during the peak of construction during 2009, South Dakota would experience an influx of up to 1,275 people. On a statewide basis, the influx of non-local workers would be insignificant (less than a 0.2% increase). Based on our experience working on pipeline projects, we believe our estimates of family members traveling with non-local workers may be high. However, there are no existing studies from which to derive a more reliable number. For the purpose of this assessment, we prefer to err on the side of caution and to slightly overestimate potential impacts on population.

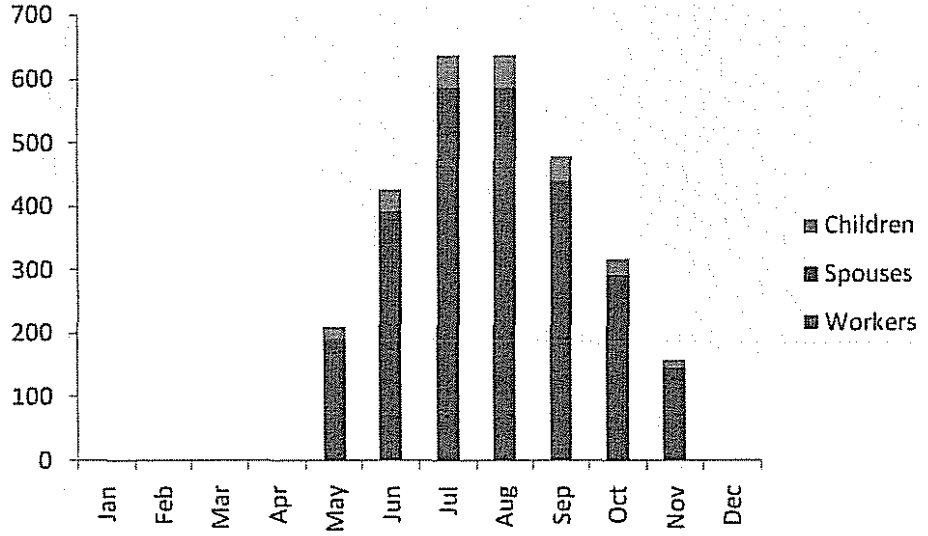
Because construction spreads are independent of each other and do not overlap, the maximum number of non-local people in any one county at the peak of construction in 2009 would be about half of the total number of people, or 638. Although the influx of non-local workers and family members would not be significant on a statewide basis, the influx of 638 people into any one county could be more consequential (anywhere between a 3% and 25% increase).

One mitigating factor on impacts to countywide population would be the fact that workers construct the pipeline in an assembly line fashion with different crews working in different locations (except that some workers would be employed at more stationary locations, such as pump stations and valve sites). The maximum number of non-local people in any one county at the peak of construction may be reduced by 15% down to 542. The influx of 542 people into any one county would be less consequential (anywhere between a 2% and 21% increase).

Another mitigating factor on impacts to countywide population would be the short duration of the peak of the construction season. The typical pipeline construction seasons starts in May and continues through November. Based on our experience, only a few workers are needed in the spring at the start of the season. Workers are added until construction reaches its peak in the summer. Workers are removed in the fall as the project winds down, until construction stops for the winter. Figure 3 illustrates the possible influx of non-local workers over the course of a construction season for a single spread.

A third mitigating factor on population is the fact that most non-local workers and their families will reside in larger communities within a reasonable commuting distance (50 miles) of the project where temporary housing (such as rental units, hotels, and motels) is more widely available. These larger communities might include Aberdeen (population 24,071), Mitchell (population 14,857), Sioux Falls (population 142,396), Watertown (population 20,526), and Yankton (population 13,767). The addition of 542 people to these communities is much less significant (only between a 0.4% and 4% increase).[5]

Figure 3: Possible Influx of Non-local Workers for a Single Spread



A final mitigating factor is rural flight. The influx makes up for only about one-third the population loss since 2000. Seven of ten counties have lost population since 2000. When combined, all ten counties show a cumulative loss of 3,109 people since 2000. Assuming population loss occurs at the same rate until 2009, the cumulative population loss is expected to reach 3,997. [5] The total population influx from the proposed project is 1,275 in 2009, which is significantly less that the population loss.

After construction, there would be no long-term impacts on population. Keystone would hire three employees locally to support operation of its pipeline.

Employment

South Dakota boasts one of the highest employment-to-population ratios in the United States.[8] Employment in the project area ranges from 93.5% of the labor force to 97.7% of the labor force. The employment rate in five of the ten counties crossed by the proposed project is equal to or higher than the state average. The number of unemployed persons in July 2007 in the ten counties crossed by the proposed project was estimated at 1,237, or 3.0% of the labor force (which is slightly higher than the state average of 2.8%). The labor supply in the ten counties crossed by the proposed project in July 2007 was estimated at 5,175.[9, 10] Labor supply includes those who currently hold jobs and would like to change, and those who, for a variety of reasons, do not have jobs. Table 2 provides employment data for the project area.

Table 2: Employment Data for the Keystone Pipeline Project (July 2007)

County Name	Labor Force (people)	Employment (people)	Unemployment (people)	Labor Supply (people)	Unemployment Rate (%)	Rate Change Since 2000 (%)
Beadle	9,548	9,316	232	1,300	2.4	+0.1
Clark	1,987	1,858	129	255	6.5	+3.2
Day	2,979	2,860	119	420	4.0	+1.0
Hanson	2,043	1,982	61	175	3.0	+0.9
Hutchinson	3,782	3,676	106	415	2.8	+0.8
Kingsbury	2,979	2,901	78	290	2.6	+0.6
McCook	3,102	3,032	70	N/A	2.3	+0.5
Marshall	2,241	2,147	94	290	4.2	+1.7
Miner	1,199	1,160	39	130	3.3	+1.5
Yankton	11,960	11,651	309	1,900	2.6	+0.5
Statewide	448,789	436,277	12,512	71,560	2.8	+0.3

Sources: 9, 10

Impacts of the proposed project on employment would be beneficial. The proposed project would directly affect unemployment in the counties affected by the project by hiring local workers and during the construction season. While most workers would be non-local, up to 180 workers would be hired locally during the peak of construction in 2009. About half as many workers would be hired locally in 2008. In South Dakota, most construction positions are typically filled by high school and college students and educational staff who find summer jobs

when school is no longer in session.[11] Assuming there are no dramatic changes over the next few years, the labor supply should be more than sufficient to accommodate local hiring.

The proposed project also would indirectly affect unemployment by stimulating the local economies and motivating local businesses to hire additional employees to support construction. Non-local workers would increase demand for goods and services from local businesses, which would, in turn, encourage local businesses to hire additional employees. Based on the regional input-output multiplier analysis conducted for this project (see the Economic Output section), up to 645 jobs would be indirectly created or induced as a result of construction. These jobs range from retail jobs to agricultural jobs.[16]

When considering jobs directly and indirectly created by construction, a total of 825 local jobs would be created by the project.[16] The counties crossed by the pipeline presently have a labor supply of 5,175 and unemployment of 1,237.[9, 10] Assuming that the labor supply and unemployment levels remain steady until construction and those who currently hold jobs and change would be replaced by those who do not have jobs, the labor supply would be expected to drop from 12% of the total labor force to 10%. Unemployment would be expected to drop from about 3% to 1%. Of course, labor would like also be obtained from some of the larger communities in adjacent counties, so labor supply and unemployment probably would not dip quite so low.

Many economists see the labor market similar to other markets that are affected by supply and demand. The forces of supply and demand jointly determine price (in this case the wage rate) and quantity (in this case the number of people employed). The increase in demand for labor as a result of construction could lead to upward pressure on wages, even more so because the labor market differs from other markets. Perhaps the most important of these differences is the function of supply and demand in setting price and quantity. In markets for goods, if the price is high there is a tendency in the long run for more goods to be produced until the demand is satisfied. With labor, overall supply cannot effectively be manufactured because people have a limited amount of time in the day, and people are not manufactured. A rise in overall wages will not necessarily result in more supply of labor. Furthermore, a rise in labor wages may, in some cases, result in less supply of labor as workers take more time off to spend their increased wages, or it may result in no change in supply. Within the overall labor market, particular segments are thought to be subject to more normal rules of supply and demand as workers are likely to change job types in response to differing wage rates.[12]

The labor market may also be affected by unions and collective bargaining, meaning that the relative negotiating strength, objectives, and aptitude of the union could impact labor price and quantity. There is much debate about the function and value of unions in our economy. Many economists believe unions have beneficial economic effects, such as higher wages and better benefits.[17] Union workers are more apt to be in higher earning ranges and have better employee benefits than nonunion workers.[18, 19] Other economists, however, view unions largely as monopolies in the labor market whose primary economic impact is to raise members' wages at the expense of unorganized labor and of the efficient functioning of the economy.[17] Regardless, the construction contractor likely would be unionized on the proposed project and up to 180 workers would be hired through local union halls (about 22% of local hires). About 645 local jobs could be created through indirect or induced market forces in potential non-union settings (about 78% of local hires).

After construction, Keystone would hire three employees locally to support operation of its pipeline.[20] Besides the local hires, an additional 58 jobs would be expected to be created indirectly as a result of operation of the pipeline (see the Economic Output section). As many as 20 jobs would be added to utility industry to produce and deliver the electricity required by the pump stations, and up to 9 jobs would be added to the construction industry to indirectly support pipeline maintenance activities. Overall, long-term impacts on labor would be expected to be beneficial.

Earnings

In 2005 South Dakota had a per capita personal income of $31,811, which ranked 29th in the United States and was 92% of the national average of $34,685. Over the previous decade, the average annual growth rate of per capita personal income was 5.0%, which exceeded the average annual growth rate for the nation of 4.2%. Earnings of persons employed in South Dakota increased from $17.5 billion in 2004 to $18.1 billion in 2005, an increase of 3.2%. Over the previous decade, the average annual growth rate was 5.6%, which slightly exceeded the average annual growth rate for the nation, which was 5.5%.[13] Table 3 provides earnings data for the project area.

Impacts of the proposed project on earnings would be expected to be beneficial. According to one estimate, for every dollar spent on construction in South Dakota, about 37 cents is earned by construction workers in South Dakota as salary and wages.[14] Based on this model, earnings in the counties crossed by

the project would increase by about $34.3 million. Indirect and induced earnings would add about $18.4 million to the project total (see the Economic Output section). When compared to the aggregate earnings of the ten counties crossed by the pipeline, the proposed project would have about a 2% impact on earnings. The annualized earnings of a full-time-equivalent pipeline construction worker would be about $38,026, which is 10% higher than the ten-county median of earnings per employed person of $34,485.

Table 3: Earnings Data for the Keystone Pipeline Project (2005)

County Name	Earnings ($)	Employed Persons	Earnings per Person ($)
Beadle	356,667,000	8,445	42,236
Clark	72,920,000	1,765	41,314
Day	90,208,000	2,815	32,045
Hanson	25,146,000	1,940	12,962
Hutchinson	110,350,000	3,645	30,274
Kingsbury	97,671,000	2,955	33,053
McCook	73,923,000	2,840	26,029
Marshall	89,172,000	2,005	44,475
Miner	41,124,000	1,145	35,916
Yankton	490,592,000	11,445	42,865
Statewide	18,097,597,000	411,550	43,974

Sources: 14, 15

TransCanada estimates that workers on its project would earn about $53 million, which is significantly higher than the estimate of $34.3 million from the statistical model. TransCanada's estimate also takes into account the fact that labor would account for a larger percentage of local expenditures since most construction materials (*e.g.*, the pipe, valves, pump motors, *etc.*) used during construction would be imported into South Dakota from areas outside of the state. Accordingly, for every dollar spent in South Dakota on construction, about 82 cents would be earned by construction workers as salary and wages. Using TransCanada's estimate, the earnings per annualized full-time worker would be about $58,758, which is about 70% higher than the ten-county median.

After construction, Keystone would hire three employees locally to support operation of its pipeline. Annual earnings associated with the three hires would be about $237,000. In addition, 58 jobs with annual earnings of about $2.6 million would be expected to be indirectly induced by the pipeline (see the Economic Output section). When compared to the aggregate earnings of the ten counties crossed by the pipeline, the proposed project would have less than a 0.1% impact on annual earnings. Overall, impacts of the proposed project on earnings would be beneficial.

Economic Output

The gross state product of South Dakota was $32.3 billion as of 2006. The service industry was the largest economic contributor in South Dakota. This sector includes the retail, finance, and health care industries. Government spending was another important segment of the state's economy, providing over 10% of the gross state product.[2]

Agriculture has historically been a key component of the South Dakota economy. Although other industries have expanded rapidly in recent decades, agricultural production is still very important to the state's economy, especially in rural areas. Major products of South Dakota agriculture include beef, wheat, corn, pork, wool, soybeans, oats, mutton, alfalfa, sunflowers, and poultry. Agriculture-related industries such as meat packing and ethanol production also have a considerable economic impact on the state. South Dakota is one of the top five ethanol-producing states in the nation.[2]

Another important sector in South Dakota's economy is tourism. Many travel to view the attractions of the state, particularly those of the Black Hills region such as historic Deadwood, Mt. Rushmore, and the nearby state and national parks. One of the largest tourist events in the state is the annual Sturgis Motorcycle Rally. The event drew over 450,000 attendants in 2006, which is significant considering the state has a population of only 750,000. In 2006, tourism provided an estimated 33,000 jobs in the state and contributed over $2 billion to the economy of South Dakota.[2]

A basic regional input-output multiplier analysis was conducted for the Keystone Pipeline Project to estimate overall economic impacts of constructing and operating the proposed pipeline system in the ten counties crossed by the pipeline. The analysis accounted for the direct increase in demand for local goods and services that would result from the proposed project, as well as the indirect and induced demand for local goods and services. Indirect effects are changes in backward-linked industries due to the new demand of the directly affected industry. For example, demand for $1 million worth of apples from the apple industry will require the fertilizer industry to increase its output as well. Induced effects take this linkage a step further and measure the changes of all industries output as a result of changes in household consumption generated from the increased household income stemming from the direct and indirect effects of business activity. These types of indirect and induced effects are often likened to a ripple through water.

Economists have come up with a model for estimating the ripple effect of changes in the economy. This model is complex and relies on multipliers, which are numerical coefficients which relate a change in demand in one industry to consequential changes in total output, wages, and employment in other industries. Fortunately, the United States Department of Commerce, Bureau of Economic Analysis maintains and periodically updates multipliers, which can be used to estimate economic impacts. The multipliers produced by the Bureau of Economic Analysis are known as the "RIMS II" multipliers, RIMS being the acronym for Regional Input-Output Modeling System.

RIMS II multipliers were obtained for this project from the Bureau of Economic Analysis to calculate the economic impact of construction and operation of the proposed project. Empirical tests indicate that RIMS II yields multipliers that are not substantially different in magnitude from those generated by regional input-output models based on relatively expensive surveys. For example, a comparison of 224 industry-specific multipliers from survey-based tables for Texas, Washington, and West Virginia indicates that the RIMS II average multipliers overestimate the average multipliers from the survey-based tables by approximately 5%. For the majority of individual industry-specific multipliers, the difference between RIMS II and survey-based multipliers is less than 10%. In addition, RIMS II and survey multipliers show statistically similar distributions of affected industries.[23]

The output multipliers represent the total dollar change in output (total expenditures) that occurs for each additional dollar of output (direct expenditures). For example, an output multiplier of 1.50 for hotels and lodging places means that for each $1.00 spent for lodging, an additional $0.50 is spent by the lodging establishment and supporting industries (wages, goods and services, capital improvements). The $1.00 is the direct expenditure, the $0.50 is the indirect and induced expenditure and $1.50 is the total economic impact. Similar multipliers are used to estimate impacts on earnings and the number of jobs supported.[21]

The regional multiplier analysis conducted for the proposed project is complicated by five factors. First, the project is much larger than the ten counties crossed by the pipeline in South Dakota and much of the work would be completed by companies from outside the region. The regional multiplier analysis should evaluate only that part of the project that is associated with purchases from firms located within South Dakota, mainly the counties crossed by the pipeline. Keystone estimated that purchases from within South Dakota, including labor, would be about $65.0 million.[22]

Second, the proposed project would involve construction of 63 miles of electric transmission lines in the project area. Even though the electric transmission lines are being reviewed independently of the proposed project, they should be evaluated as part of the regional multiplier analysis. Keystone estimated that the cost of the new electric transmission lines would be about $28.2 million.[22]

Third, a large part of the construction work force working in South Dakota would be comprised of non-local workers. The regional multiplier analysis should adjust for differences in spending between local and non-local workers. Propensity to consume locally is lower for non-local workers than local workers. For example, the analysis should account for non-local workers sending a portion of the earnings to family members outside the project area. Also non-local workers are more likely to contribute a larger share of their earnings toward travel accommodations and food service. Differentiating between local and non-local workers was beyond the scope of this assessment, and local and non-local workers were treated identically, with a clear understanding of the limitations of doing so.

Fourth, a detailed analysis depends on accurate and complete data regarding initial changes. For example, using a "bill-of-goods" breakdown can better identify good and services to be purchased locally and how those purchases would affect the regional economy. Additionally, a bill-of-goods breakdown allows final-demand changes to be separated into producers' prices which can account for production costs, transportation costs, and trade margins. A bill-of-goods was not available for the Keystone Pipeline Project; therefore, this assessment provides only a general final-demand analysis.

Fifth, the proposed project would involve two phases with different economic impacts associated with each phase. The regional multiplier analysis evaluated the construction and operation phases separately.

The total cost of purchases from the South Dakota counties affected by the project would be about $93.2 million (see Table 4). The construction costs include goods and services, including labor, for building the proposed pipeline, pump stations, and mainline valves, as well as the associated electric transmission lines. The annual cost of purchases from within the counties affected by the project for operating the pipeline would be about initially $11.0 million. The annual operating costs include the cost of electricity to run the pump stations and mainline valves as well as the cost of maintaining and repairing the pipeline (see Table 4).[22]

Based on RIMS II multipliers for the counties affected by construction, for every $1.00 spent by TransCanada in the project area for construction of the pipeline, an additional $0.70 of indirect and induced output would be expected from other industries. TransCanada is planning to spend about $93.2 million in the project area for construction of the pipeline. Therefore, an additional $65.2 million of indirect and induced output would be expected in the construction and other industries. The largest total outputs would be felt by the construction, retail trade, and health care industries, as well as possibly the accommodations and food services industries (see the

Table 4: Estimated Cost of the Keystone Pipeline Project

Project Component	Regional Cost
CONSTRUCTION (one-time)	
Pipeline, Pump Stations, Mainline Valves	$65,000,000
Electric Transmission Lines	$28,200,000
	$93,200,000
OPERATION (annual)	
Electricity	$10,100,000
System Maintenance & Repair	$880,000
	$10,980,000

Source: 18

Tourism section). When comparing the total project output to the gross state product for 2005, the economic impacts of the proposed project seem inconsequential (only about 0.5%). On a countywide basis, however, the impacts would seem more appreciable. Expected total output, earnings, and number of jobs created during construction are listed by industry in Table 5.

During operation of the pipeline, for every $1.00 spent by TransCanada in the project area, an additional $0.33 of indirect and induced output would be expected from other industries. TransCanada is planning on spending about $11.0 million annually in the project area for operation of the pipeline. Therefore, an additional $3.6 million of indirect and induced output would be expected in other industries. The largest total outputs would be felt by the utilities, construction, and transportation and warehousing industries. When comparing the total project output to the gross state product for 2005, the operation of the pipeline would have minimal impact (less than 0.05%). Again, however, the impacts would be more appreciable on a countywide basis. The expected total output, earnings, and number of jobs created during operation are listed by industry in Table 5.

In general, additional economic output is considered a beneficial impact because it results in additional jobs and wages. However, as demand for labor rises, so can labor costs. For economic output to be considered beneficial, increases in revenues must exceed increases in costs. As previously discussed, the labor supply in the area appears to be sufficient to accommodate the additional jobs. Furthermore, labor costs in the industries most affected by the project are less than one-third of revenues, suggesting that the net economic impact of the project would be beneficial.

Experience and common sense suggest that certain businesses and industries may be affected differently than indicated by the regional input-output model. In the case of agriculture, construction of the pipeline would remove standing crops from the project area and potentially disrupt farming operations, thereby reducing the actual output predicted for the agricultural

Table 5: Economic Impact of the Keystone Pipeline Project

Industry	Construction (one-time)			Operation (annual)		
	Output ($)	Earnings ($)	Empl. (jobs)	Output ($)	Earnings ($)	Empl. (jobs)
Agriculture, Forestry, Fishing, and Hunting	605,800	111,840	4	29,960	6,106	0
Mining	745,600	195,720	4	11,080	2,858	0
Utilities*	1,621,680	251,640	3	10,205,202	1,575,956	20
Construction	93,610,080	34,484,000	1,013**	1,108,092	408,420	12
Manufacturing	8,621,000	1,770,800	45	226,840	45,000	1
Wholesale Trade	5,880,920	1,854,680	40	247,428	78,112	2
Retail Trade	12,306,280	4,063,520	194	423,992	139,368	7
Transportation and Warehousing*	2,889,200	932,000	24	618,130	133,030	3
Information	1,910,600	316,880	7	89,750	15,112	0
Finance and Insurance	4,753,200	1,276,840	32	286,270	76,696	2
Real estate and Rental and Leasing	6,719,720	242,320	8	372,508	13,398	0
Professional, Scientific, and Technical Services	2,889,200	1,053,160	27	126,260	46,304	1
Management of Companies and Enterprises	335,520	139,800	2	12,258	5,360	0
Administrative and Waste Mgmt. Services	1,658,960	587,160	28	86,364	30,794	1
Educational Services	820,160	419,400	20	49,154	25,170	1
Health Care and Social Assistance	7,716,960	3,355,200	94	418,284	181,160	5
Arts, Entertainment, and Recreation	391,440	130,480	7	20,866	7,292	0
Accommodation and Food Services	2,721,440	764,240	60	152,956	42,566	3
Other Services*	2,162,240	820,160	38	104,246	39,054	2
Households	52,835,080	65,240	4	2,874,392	3,646	0
	158,440,000	52,835,080	1,655	14,589,640	2,875,402	61

*Includes government
**The number of direct construction jobs estimated by TransCanada was 1,200, which is higher than the number of total jobs estimated through the RIMS II analysis. The construction jobs estimated through RIMS II analysis would be about 1,009 direct construction jobs and 4 indirect and induced construction jobs for a total of 1,013 construction jobs. The TransCanada estimate is expected to be more accurate.
Source: 16

industry. In the case of accommodations and food services, the influx of non-local workers to the area would likely cause a much greater impact on the accommodations and food services industries than predicted by the model. Specific impacts on agriculture, tourism, development, housing, utilities, education, law enforcement, emergency response, health care, roads, and taxes are discussed in more detail in the following sections.

Agriculture

The proposed pipeline would affect approximately 2,169 acres of cropland.[24] Short-term impacts associated with construction would include loss of standing crops within the construction work area and disruption of farming operations in the vicinity of project activities during construction. Installation of the proposed pipeline would take row crops out of production for one growing season. After

construction, agricultural areas, including the permanent right-of-way, would be allowed to revert to former agricultural use.

A variety of field crops are produced in the ten counties crossed by the proposed pipeline. Soybeans and corn account for more than two-thirds of all acres harvested. Other common field crops include wheat, hay, oats, sunflowers, barley, and flaxseed. Based on 2006 harvest acreages, yields, and prices, the proposed project would result in the loss of about $550,000 of field crops during construction. This loss would offset a large portion of the $605,800 gain in the sector predicted by the regional input-output model. However, compared to the 2.7 million acres of cropland in the ten counties crossed by the pipeline that were harvested in 2006, the acreage of cropland land taken out of production would be insignificant (less than 0.1%).[25, 26]

To mitigate impacts on farmers, TransCanada would compensate farmers for crop loss and other associated damages. Farmers would be compensated 100% of the value of the crop lost when the crops are taken out of production during the year of construction. With the understanding that the land could take several years to return to previous production levels, TransCanada would compensate farmers 75% the value of the crop lost the year after construction, and 50% the year after that.[27]

In reality, some agricultural land and hay fields may experience reduced yields greater than those anticipated by TransCanada's compensation package. Also, yields of some fields could take longer than two years to return to previous production levels. TransCanada has indicated that it would monitor the yield of land impacted by construction with the help of agricultural specialists when requested by the landowner. If alterations are indicated from that of adjacent lands, it would compensate the landowner for reduced yields and implement procedures to return the land to equivalent capability. We believe that landowners may not be aware that they can request yield monitoring, especially two or more years after construction. Therefore, we recommend that:

- **TransCanada monitor the yield of agricultural lands and hay fields impacted by construction, except where monitoring is waived by the landowner in writing. Monitoring shall be conducted until the area is successfully restored to yields which are similar to adjacent portions of the same field that were not disturbed by construction. TransCanada shall compensate the landowner for reduced yields at market rates until the area is successfully restored.**

Tourism

Many of the tourist attractions that South Dakota is traditionally known for, such as Mount Rushmore, the Black Hills, Sturgis Motorcycle Rally, Wall Drug, occur in the western part of the state. However, the eastern part of the state is well known for hunting, fishing, and other types of outdoor recreation, such as hiking, biking, camping, birding, and snowmobiling. There are numerous state parks, local museums, fairs, and special events in the eastern part of the state and the counties crossed by the project.

During construction, non-local workers would demand many of the same goods and services as tourists. For example, construction workers would utilize hotels, motels, restaurants, and drinking establishments that are also commonly used by tourists. The influx of non-local workers to the area would likely cause a much greater impact on output from the accommodations and food services industries than the $2.7 million predicted by the RIMS II model. Based on the construction schedule, number of non-local workers, and 2007 *per diem* rates ($109 per day), the accommodations and food services industries could see output of up to $23.0 million, or about 8.5 times the output predicted by RIMS II.[28] Even if only half of that amount is spent on food and lodging by non-local workers, it is still significantly greater.

The increase in demand for accommodations and food services would normally be considered positive economic impact, but also could be considered negative if non-local construction workers crowd out or displace traditional users. For example, construction workers could fully occupy hotels and motels in an area and displace hunters during hunting season, thereby negatively impacting tourism. An evaluation of hotel and motel occupancy rates suggests that the project area has adequate hotel and motel availability to serve both traditional users and the influx of non-local workers (see the Housing section below).

Perhaps the most important tourist activity in the counties crossed by the proposed pipeline is hunting. Beadle County is known by many visitors as the pheasant capital of the world. Each year thousands of hunters from out of state go to Beadle and surrounding counties for pheasant hunting from late October to early January.[29] Hunting in the immediate vicinity of the project would be affected during construction. Construction noise and activity would encourage most wildlife to move out of the project area and would result in a diminished hunting experience. Additionally, hunting would be prohibited within the project right-of-way for safety reasons. Three factors would mitigate impacts on hunting.

First, there is an abundance of hunting territory adjacent to the proposed pipeline. Second, construction would be winding down as the hunting season is starting. Third, hunting would only be prohibited in those areas where construction is active. No impacts on hunting would be expected after construction.

The only designated recreational area directly affected by the proposed pipeline would be the Missouri River, which has been designated a National Recreational River. Rivers with this designation are preserved because of their remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. TransCanada is proposing to drill a hole under the river and install the pipe through the hole without affecting the bed, banks, or water quality of the river or areas within the National Recreational River administrative boundary.[1] Therefore, the project would not result in significant adverse impacts on the river or associated recreation.

County commissioners were contacted to determine if there were any special events in the project area that could be affected by construction, such as marathon routes or other events that would require coordination during construction. The county commissioners did not identify any special events that would require special coordination as of the date of this assessment. However, we note that Beadle County hosts the state fair in early September each year. In recent years, the fair has seen attendance dwindle and the fair has risked cancellation. However, in 2007, the fair saw a rebound. Attendance was up around 151,000 and camping in the main campground was sold out prior to opening day. The influx of non-local workers could result in increased fair attendance and revenue, but could also increase competition for limited fair resources, such as campsites. Because the future of the fair is still somewhat uncertain and the influx of workers has potential to both positively and negatively impact the fair, we recommend that:

- **TransCanada coordinate project activities with fair administrators so as to best make use of fair resources for traditional users as well as construction workers.**

Development

The proposed project does not cross commercially or industrially developed land in South Dakota, although it also passes within about 2,000 feet the Spencer Quarry, a quartzite quarry and asphalt plant, in McCook County. It also crosses

a few farmsteads and approach a few areas of suburban residential development along it route, particularly on the south end of the project near Yankton. Impacts of construction on residences could be significant on a site-specific basis, and might include noise and dust generated by construction equipment, limited access to property, increased traffic and congestion on nearby roads, and loss of valuable trees and landscaping. Communicating information about project schedules, employing appropriate safety procedures, and restoring affected areas can mitigate these impacts. Therefore, we recommend that:

- **TransCanada prepare and submit to the South Dakota Public Utilities Commission for review and approval a residential mitigation plan to:**
  a. **coordinate construction work schedules with affected residential landowners prior to the start of construction;**
  b. **maintain access to all residences, except for brief periods essential to pipe-laying as coordinated with affected residential landowners;**
  c. **installing temporary safety fencing to control access and minimize hazards associated with an open trench in residential areas;**
  d. **notifying affected residents in advance of any scheduled disruption of utilities and limit the duration of any interruption to the smallest time possible;**
  e. **repairing any damages to property that result from construction activities; and**
  f. **restoring all areas disturbed by construction to preconstruction conditions or better.**

After construction, certain structures and uses would be prohibited on the permanent pipeline right-of-way, including construction of aboveground structures, construction of septic systems, planting or cultivation of trees, quarry/mining, or any other activity that could affect TransCanada's ability to safely operate, access, maintain, or repair its pipeline. These restrictions would not necessarily restrict future development of a particular parcel of land, but could affect the physical layout of how the particular parcel is developed and the manner in which it is developed.

Frequently, property owners affected by pipeline projects are concerned about property devaluation caused by damage from construction and a permanent pipeline easement. An easement would be used to convey both temporary (for construction) and permanent rights-of-way to TransCanada. The easement would give TransCanada the right to construct, operate, and maintain the

pipeline, and establish a permanent right-of-way. In return, TransCanada would compensate the landowner for use of the land.

TransCanada would utilize temporary and permanent easements with landowners as well as construction restriction agreements. The temporary and permanent easement agreements between TransCanada and the landowners would specify compensation for damages to property during construction, loss of use during construction, loss of renewable and nonrenewable or other resources, and, in the case of permanent easements, allowable uses of the permanent right-of-way after construction. Construction restriction agreements would address avoidance or mitigation measures for a particular piece of property to be implemented during construction, such as topsoil stripping or grazing deferments.[30]

According to TransCanada, it would compensate landowners for a permanent easement at the full market value of the land affected by the pipeline just as if it were purchasing the land in fee. TransCanada would compensate at half market value for areas that would be temporarily disturbed during construction but would not be retained permanently for operation of the pipeline.[22] If an easement cannot be negotiated with the landowner, TransCanada may be able to obtain an easement by the use of eminent domain. In this case, the landowner would still be compensated by TransCanada, but the amount of compensation would be determined by the courts.

The effect that a pipeline easement may have on property values is a damage-related issue that would be negotiated between the parties during the easement acquisition process. The easement acquisition process is designed to provide fair compensation to the landowner for the right to use the property for pipeline construction and operation. Appraisal methods used to value land are based on objective characteristics of the property and any improvements. If an easement cannot be negotiated with the landowner and the project is approved by the South Dakota Public Utilities Commission, state law would allow TransCanada to obtain an easement by use of eminent domain. In this case, the property owner would still be compensated by TransCanada, but the amount of compensation would be determined by the courts.

The impact a pipeline may have on the value of a tract of land depends on many factors, including the size of the tract, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. Subjective valuation is generally not considered in appraisals. This is not to say that the pipeline would not affect resale values. A potential purchaser of

property may make a decision to purchase land based on his or her planned use. An industrial user might find the pipeline (*i.e.*, a potential source of energy for an industrial plant) preferable, whereas a farmer or resident might find it objectionable. If the presence of a pipeline renders the planned use infeasible, it is possible that a potential purchaser would decide not to purchase the property. However, each potential purchaser has different criteria and differing capabilities to purchase land.

Fears about pipeline safety and diminished market value of property due to such fears can also be a concern. In 1996, the Fifth Circuit Court of Appeals upheld the idea that it is proper to consider diminished market value due to general public fears, though as a separate item of damage, it might be too speculative and conjectural. The court acknowledged that the value in any given condemnation case will always be a matter of opinion for competing appraisal experts to set forth and for a fact finder to ultimately decide.[31] In 2001, a study of four communities around the United States funded by the Interstate Natural Gas Association of America provided evidence suggesting that fears about pipeline safety and encumbrances from easements had no significant impact on the sale price or demand for properties located along pipeline rights-of-way.[32]

Property taxes for a piece of property are generally based on the actual use of the land. If a landowner feels that the presence of a pipeline easement reduces the use or value of his or her land, resulting in an overpayment of property taxes, he or she may appeal the issue of the assessment and subsequent property taxation to the local property tax agency.

Housing

Although the proposed pipeline would be constructed in a mostly rural environment, housing is thoroughly developed in the project area. Permanent housing in the ten counties crossed by the proposed pipeline consists of over 36,000 houses and apartments, nearly 5,000 of which are vacant. Of the 5,000 vacant houses and apartments, an estimated 1,634 are available for short-term or seasonal rental. There are also at least 24 hotels and motels and 3 recreation vehicle parks and campgrounds available for short-term rent in the counties crossed by the pipeline. The 24 hotels and motels have about 1,059 rooms.[33, 34, 35]

Hotel and motel occupancy varies by location and season. Summer months typically see the highest occupancy, while winter months see the lowest. The

highest average occupancy rate in 2006 was 67% and occurred in July. The lowest average occupancy rate was 37% and occurred in December. Assuming that short-term house and apartment occupancy rates are similar to hotel and motel occupancy rates, between 845 and 1,353 total units (houses, apartments, hotel rooms, and motel rooms) would be expected to be available for construction workers depending on time of year.[33, 34, 35]

Although not necessarily within the counties crossed by the project, several larger communities are within a reasonable commuting distance (50 miles) of the project. These larger communities include Aberdeen, Mitchell, Sioux Falls, Watertown, and Yankton (which are in a county crossed by the pipeline). These communities have an estimated 304 short-term house and apartment units; 91 hotels and motels; and 6 recreation vehicle parks or campgrounds available for short-term rent.[33, 34, 36]

The 91 hotels and motels have about 6,945 total rooms. The highest average occupancy rate last year was 73% and occurred in July and August. The lowest average occupancy rate was 44% and occurred in January. Assuming that short-term house and apartment occupancy rates are similar to hotel and motel occupancy rates, between 1,963 and 3,121 total units (houses, apartments, hotel rooms, and motel rooms) would be expected to be available for construction workers depending on time of year.[33, 34, 36]

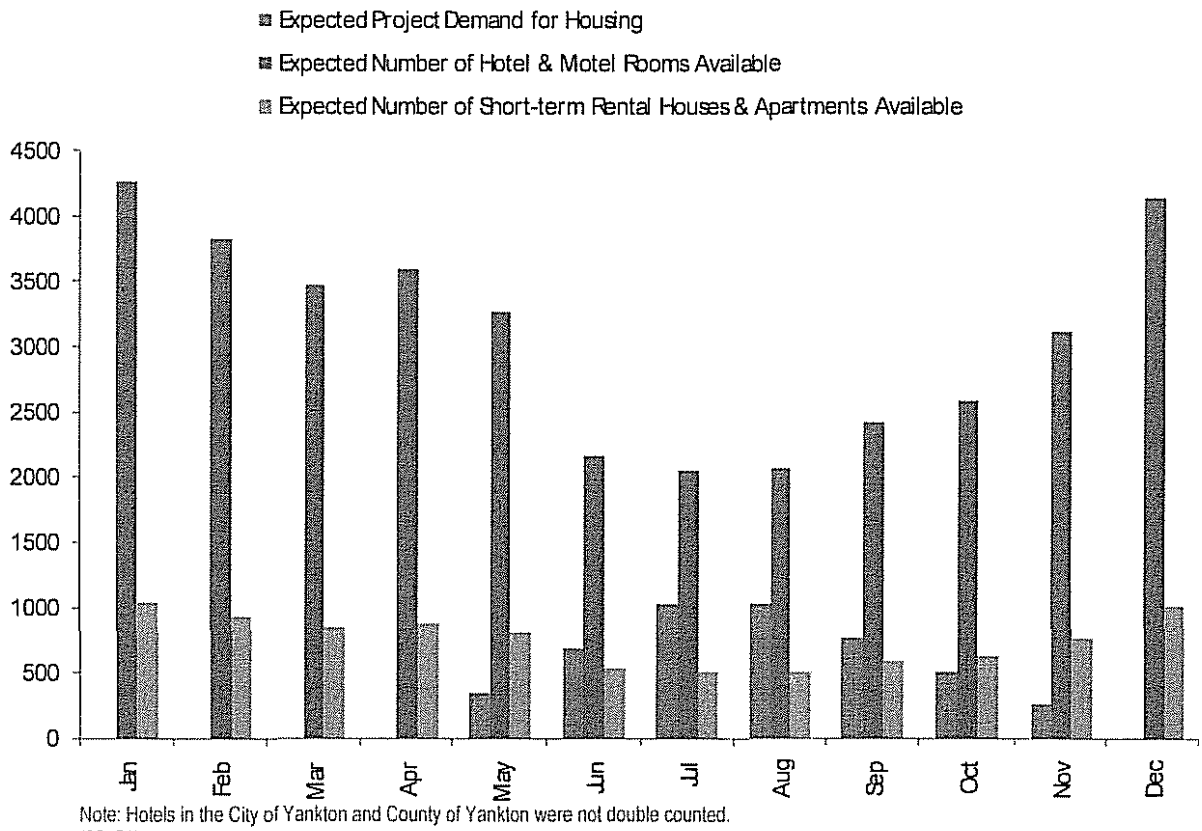
Most non-local project workers would use temporary housing, such as rental units, hotels, motels, and possibly campgrounds and recreational vehicle parks during their stay. Demand for temporary housing would go up during construction as a result of non-local workers moving into the area and would be expected to peak in the summer months of July and August, which incidentally coincides with peak occupancy for hotels and motels. An estimated 510 housing units would be needed for the expected influx of non-local workers and their family members at the peak of construction in 2008, and 1,020 housing units would be needed at the peak of construction in 2009 (assuming that accompanying family members occupy the same housing unit as the non-local worker).

The expected worker influx compared to housing availability indicates that the project area would have adequate housing available to serve the influx of non-local workers during construction, especially considering the fact that some larger nearby communities, such as Huron and Brookings, were not even evaluated for housing availability. Further, if workers were to only occupy hotels and motels, it appears that there would be sufficient vacancy for the workers.

Figure 4 illustrates the demand for temporary housing compared to the expected available temporary housing within the project area during the peak of construction.

Despite an adequate supply of hotel rooms, supply and demand suggest that the influx of workers would create upward pressure on the cost of hotel and motel labor as well as the price of hotel and motel rooms. It is also likely that some hotels and motels would experience full occupancy and traditional leisure or business travelers that frequent those particular establishments could be displaced to other establishments. These impacts would be temporary and would last for the duration of construction only. After construction, there would be no long-term impacts on housing as TransCanada would employee only three local workers to support operation of its pipeline.

Figure 4: Housing Supply and Demand for the Keystone Pipeline Project During the Peak of Construction



Note: Hotels in the City of Yankton and County of Yankton were not double counted.
(30, 31)

Utilities

Most houses, apartments, hotels, and motels that would be utilized by construction workers are already serviced by existing utilities, such as gas, electric, water, sewer, solid waste disposal, and telephone. Recent rural flight has left the area with a more robust infrastructure than is needed by the current population. Just a few years ago, the ten counties crossed by the proposed pipeline supported a population greater than that expected after the influx of non- local workers and their family members.[5] Although project personnel renting houses or apartments may need to sign up for new utility services, construction of new utility infrastructure (other than the electric transmission lines to serve the four new pump stations) would not be required.

Construction of the proposed project would result in increased utilization of solid and hazardous waste facilities in South Dakota. Waste from pipeline construction typically includes tree stumps, rocks, spacer ropes, welding rods, end caps, pipe shavings, paper, cardboard, oil, grease, paint, solvents, office waste, and other miscellaneous trash and debris. No highly toxic or unusual wastes would be generated by the project. According to TransCanada, the amount of waste generated by construction should be able to be handled and disposed of at local licensed waste disposal sites.[7]

After construction, minimal waste would be generated by operation of the pipeline in South Dakota. TransCanada would likely subscribe to local waste and sanitary services for its pump stations.

Education

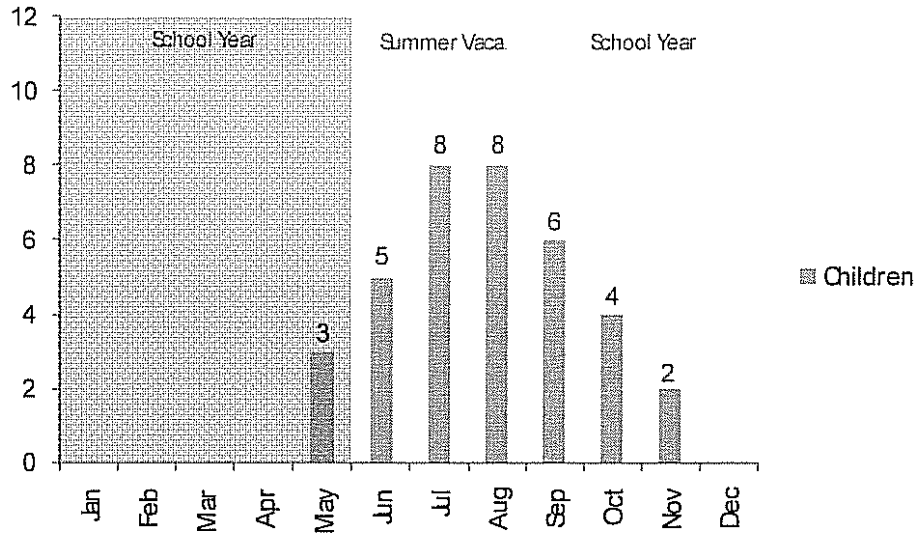
Impacts on the existing school system are expected to be minimal. Due to the transitory nature of construction, most workers do not travel with their families or school-age children. Nonetheless, we assumed that about 5% of non-local workers may travel with 2 school-age children, for a total of 102 children during the peak of construction. Assuming that school-age children are evenly distributed between all grade levels (kindergarten through 12th grade) only about 8 children in each grade level would move into the project area. Because the peak of construction occurs during the summer months when school is not in session, the educational system would need to accommodate at most 6 children in each grade level during the beginning of the school year. Figure 5 illustrates the number of children per grade level that could potentially move into South Dakota. The existing educational system should be able to

accommodate this small influx of students. Further, this estimate is probably high because, more likely than not, school age children would return to their permanent residence outside of South Dakota at the start of the school year.

Law Enforcement & Emergency Services

Public safety and law enforcement in South Dakota is provided by a variety of federal, state, and local agencies. Most law enforcement is provided on a local level by city police departments or county sheriff departments. According to the United States Department of Justice, the ten counties crossed by the proposed pipeline employed 130 full-time law enforcement officers in local sheriff and police departments in 2006. This equates to a ratio of 1 local law enforcement officer per 587 people, or 1:587.[37, 38] During the peak of construction, the ratio would be

Figure 5: Possible Number of School-Age Children in Each Grade Level



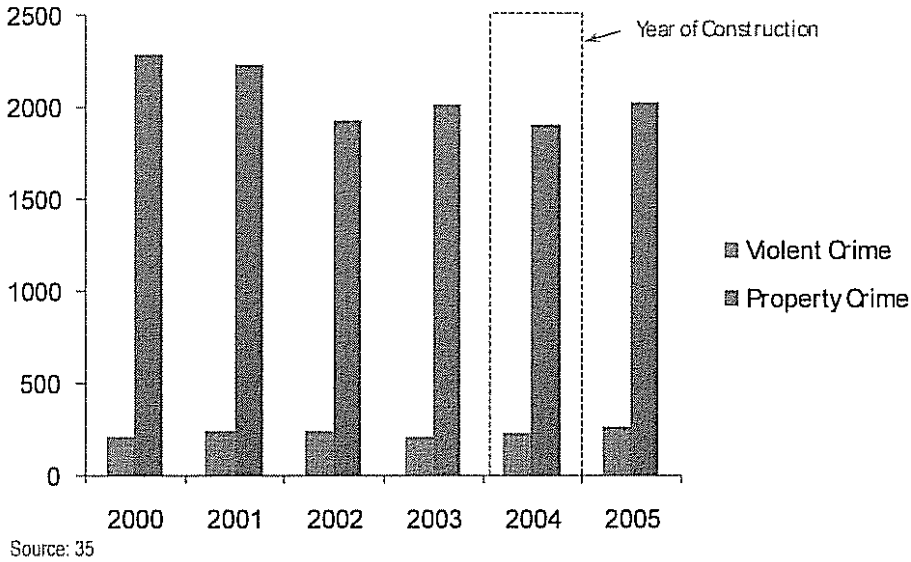
reduced slightly to about 1:597. To maintain the ratio of law enforcement officers per person, 2 additional officers would be required during the peak of construction.

All ten counties crossed by the proposed pipeline have lower rates of violent crime and property crime than the statewide average.[37] Historical data suggests that the influx of non-local workers on pipeline projects does not affect local crime rates. In the summer of 2004, a 380-mile-long pipeline was constructed across Colorado and Kansas. The project crossed nine rural counties in Kansas and five rural counties in Colorado. The project employed a workforce similar in size to the workforce proposed on the Keystone Pipeline Project.[39] The Department of Justice crime data for sheriff offices in the counties crossed by the project in Kansas and Colorado showed no discernable crime bump in 2004 attributable to construction. In fact, property crime reported by the sheriffs' offices was at its lowest rate compared to the four years preceding and one year following construction and violent crime was slightly lower than average (see Figure 6).[40]

As with local law enforcement, demand for firefighting or other emergency services would not be expected to increase dramatically during construction. The community infrastructure just a few years ago accommodated a larger population than the increase expected from the influx of workers with the project. With crude oil pipelines, however, there is always a concern that a leak or incident during operation of the pipeline could require emergency response. Federal regulations prescribe minimum standards for operating and maintaining

pipeline facilities, and each pipeline operator must establish an emergency response plan that includes procedures to minimize the hazards in a pipeline emergency and for establishing and maintaining communications with local fire, police, and public officials, and for coordinating emergency response. TransCanada has developed a draft emergency response plan that is being reviewed by the Public Utilities Commission.

Figure 6: Crimes per 100,000 People for the Kansas and Colorado Pipeline Project



Source: 35

In addition to an emergency response plan, federal regulations also require pipeline operators to establish public awareness programs to enable customers, the public, government officials, emergency responders, and those engaged in excavation activities to recognize a pipeline emergency and respond appropriately. One of the main benefits of a public awareness program is the enhanced safety and security of pipeline. A more informed public will reduce the likelihood and consequences of a pipeline emergency. According to TransCanada, it would implement a comprehensive integrated public awareness program consistent with that employed by TransCanada on all its pipelines in the United States.

As part of its integrated public awareness program, TransCanada would educate emergency response officials on the company's emergency response procedures and how the company would work with emergency responders during an emergency. TransCanada would also involve local emergency responders in its training exercises, which are designed to meet the requirements of the National Preparedness for Response Exercise Program Guidelines developed by the United States Coast Guard and adopted by the United State

Department of Transportation, Pipeline and Hazardous Materials Safety Administration, United States Environmental Protection Agency, and Minerals Management Service. The primary types of training exercises in TransCanada's program are: notification; tabletop; Keystone-owned equipment deployment; contractor; unannounced exercises by government agencies; and area-wide exercises up to and including actual field drills conducted by industry and the government agencies.[41]

The economic impact of a pipeline incident is impossible to predict and would depend on many factors, such as the volume of the spill, the particular type of crude oil spilled, the location of the spill, and the resources affected by the spill. Some incidents may be small or occur in safe locations with little impact, while others may be large or occur in unusually sensitive areas.

Regardless of size location, almost any pipeline incident would result in additional economic output. Since economic output records every monetary transaction as positive, the cost of spending to mitigate a pipeline incident would be tallied as economic output. However, economic output does not necessarily mean economic progress. In fact, such situations have been described by the "broken window" fallacy. The broken window fallacy is the idea that destruction (as in breaking a window) is somehow positive because it provides economic activity for the person replacing the window. Of course, the person whose window was broken and has it fixed will spend money that he or she could have spent on something else (and would have spent on something else).[42] In any case, TransCanada indicated that it would be responsible for commercial losses that arise from a leak on the Keystone Pipeline, including the clean-up expense and payment for property damages as a result of the leak.[30] If the leak were caused by a third party, it seems plausible that TransCanada might seek damages from the third party.

Pipeline incidents may also have social and political consequences that affect their economics. Consider the Bellingham and Carlsbad natural gas pipeline incidents (we emphasize that both incidents were natural gas pipeline incidents, not crude oil pipeline incidents). In 1999 and 2000, the nation experienced two highly publicized natural gas pipeline incidents. The first was in Bellingham, Washington where three people were killed due to a natural gas pipeline explosion, and the second was in Carlsbad, New Mexico where 12 people were killed. These two incidents caused Congress to pass the Pipeline Safety Improvement Act of 2002, which mandated significant changes in the way that the natural gas pipeline industry ensured the safety and integrity of its pipelines. The cost of the legislation's new requirements to pipeline companies was

estimated at between $5 billion and $11 billion over 20 years.[43] Not only did the two pipeline incidents result in losses to the victims and the pipeline companies, but they also resulted in large costs for the entire industry.

Health Care

Health care is readily available in the counties crossed by the proposed pipeline. There are 8 hospitals in the counties crossed by the proposed pipeline with 233 beds and an additional 21 hospitals in nearby counties with an additional 1,381 beds (see Table 6).[44] Some of the hospitals, such as Sanford USD Medical Center, are world renowned and offer comprehensive medical services. Sanford was named "One of America's Best" by US News & World Report in 2006, chosen one of the "Nation's Top Hospitals" for 2006 by National Research Corporation, recognized as one of the "Top 100 Hospitals" by Thomson, provides emergency transportation by helicopter and fixed-wing aircrafts, has over 24,000 annual admissions with over 32,000 emergency room responses a year. In addition to the hospitals, there are numerous medical and dental clinics in the area to serve the routine needs of the population.

Table 6: Hospitals Near the Keystone Pipeline Project

County	Medical Facility Name	City	Routine Service Beds*	Special Care Beds**	Total Beds
Beadle†	Huron Regional Medical Center	Huron	19	6	25
Day†	Lake Area Hospital	Webster	25	0	25
Hutchinson†	Avera St. Benedict Health Center	Parkston	25	0	25
Hutchinson†	Freeman Regional Health Services	Freeman	25	0	25
Kingsbury†	De Smet Memorial Hospital	De Smet	17	0	17
Marshall†	Marshall County Healthcare Center	Britton	20	0	20
Yankton†	Avera Sacred Heart Hospital	Yankton	78	12	90
Yankton†	Lewis and Clark Specialty Hospital	Yankton	6	0	6
			215	18	233
Bon Homme	St. Michael's Hospital	Tyndall	25	0	25
Brookings	Brookings Hospital	Brookings	49	0	49
Brown	Avera St. Luke's Hospital	Aberdeen	103	10	113
Brown	Dakota Plains Surgery Center	Aberdeen	8	0	8
Charles Mix	Community Memorial Hospital	Wagner	20	0	20
Clay	Sanford Vermillion Medical Center	Vermillion	25	0	25
Codington	Prairie Lakes Healthcare Systems	Watertown	76	5	81
Davison	Avera Queen of Peace Hospital	Mitchell	80	8	88
Douglas	Douglas County Memorial Hospital	Armour	11	0	11
Jerauld	Avera Weskota Memorial Med. Center	Wessington Spr.	18	0	18

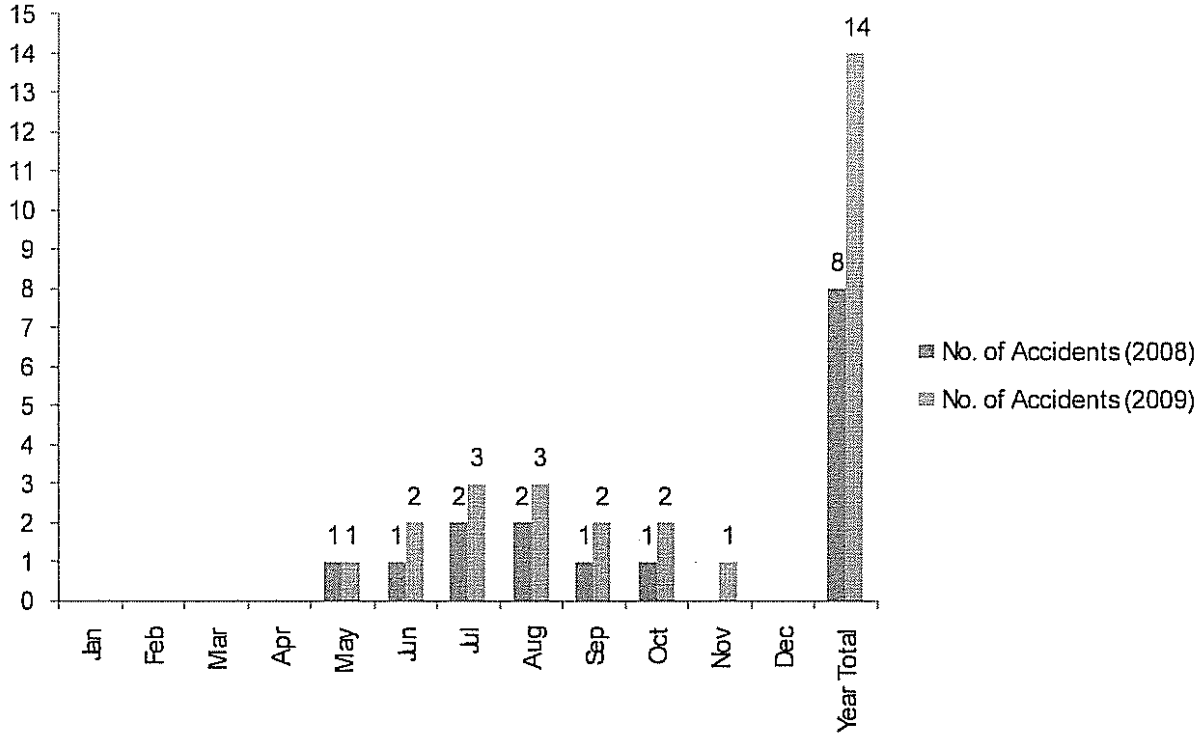
Lake	Madison Community Hospital	Madison	25	0	25
Lincoln	Canton-Inwood Memorial Hospital	Canton	22	0	22
Minnehaha	Avera Dell Area Helth Center	Dell Rapids	21	0	21
Minnehaha	Avera Heart Hospital of South Dakota	Sioux Falls	55	0	55
Minnehaha	Avera McKennan Hospital	Sioux Falls	242	60	302
Minnehaha	Sanford USD Medical Center	Sioux Falls	324	89	413
Minnehaha	Select Specialty Hospital	Sioux Falls	24	0	24
Minnehaha	Sioux Falls Surgery Center	Sioux Falls	13	0	13
Roberts	Coteau Des Prairies Hospital	Sisseton	31	0	31
Spink	Community Memorial Hospital	Redfield	25	0	25
Turner	Pioneer Memorial Hospital	Viborg	12	0	12
			1,209	172	1,381

* Routine service bed are general medical/surgical beds are the beds used for routine care.
** Special care beds include intensive care units, coronary care units, etc.
† County is crossed by proposed pipeline project.
Source: 36

One especially important concern associated with the proposed project is that construction could lead to increased demand for emergency medical services to treat injuries from construction-related accidents. According to the United States Department of Labor, the rate of occupational injuries in the construction industry was 239.5 incidents per 10,000 full-time workers in 2005. This rate was about 76% higher than the average of all industries, which was 135.7 incidents per 10,000 full-time workers.[45]

The actual number of construction-related incidents as a result pipeline construction and the degree of impact on the surrounding communities is impossible to predict. However, based on Department of Labor rates and workforce estimates from 2006, about 8 construction-related incidents might be expected in 2008 and 14 construction-related incidents might be expected in 2009 (see Figure 7). Not all incidents would necessarily require medical attention. The counties and cities in the vicinity of the project appear to have adequate health care services to meet the emergency as well as routine health care needs of the community during construction. After construction, TransCanada would hire three local employees, which would result in no impact on community health care needs.

Figure 7: Number of Construction Accidents that Might be Expected on the Keystone Pipeline Project



Roads & Transportation

South Dakota's road system serves as the backbone of the state's transportation system and carries the bulk of the state's commercial goods as well as personal travel. The road system in the South Dakota has evolved over time to a sophisticated network of federal, state, and local roads, bridges, and overpasses, all designed to carry a large amount of traffic. Most of the roads in the state system are moderately traveled and have average daily traffic counts of less than 1,500 vehicles. However, some of the more heavily traveled highways exceed 2,500 vehicles per day. County system roads are much less traveled and typically have average daily traffic counts under 100 vehicles. Traffic counts tend to be highest along interstates and in urban centers and easily exceed 5,000 or 10,000 vehicles per day in some areas. For the ten counties crossed by the proposed pipeline, the 2006 average daily vehicle count for state system roads was 1,698 vehicles. The average daily vehicle count for county system roads was 50 vehicles.[46]

The movement of construction equipment, materials, and crew members to the project area would result in additional traffic on the roads in the counties crossed by the pipeline and in adjacent counties. The actual capacity of each road is

dependent on the number of factors, such as number of travel lanes, intersections, traffic signals, speed limits, *etc*. Based on construction vehicle estimates provided by TransCanada, daily traffic counts would not be expected to increase by more than 200 vehicles per day for most roads, although traffic counts could be higher near contractor yards where workers would meet in the morning to share rides to the construction right-of-way. According to county commissioners polled as of the date of this assessment, the existing road infrastructure would be sufficient to accommodate construction traffic, although heavier traffic and slower moving vehicles could be encountered by road users at various times. No new roads would be constructed in South Dakota as part of the proposed project.

In addition to congestion, traffic could be disrupted from pipeline construction across roads. According to TransCanada, the pipeline would be installed across most major paved roads, primary gravel roads, and railroads using the bore technique. The bore technique involves excavating a pit on each side of the road then boring a straight-line hole under the road large enough to install the pipeline. Boring would result in little or no disruption to traffic or damage to the roads. Each bored crossing would be expected to take 1 to 2 days for most roads and railroads and up to 10 days for long crossings such as interstates or four-lane highways.[24]

Most smaller unpaved roads and driveways would be crossed using the open-cut method. The open-cut method would require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible for public roads, at least one lane of traffic would be kept open, except during brief periods when it is necessary to close the road to install the pipeline. Most open-cut road crossings would be completed and the road resurfaced in 1 or 2 days. TransCanada would take measures, such as posting signs at open-cut road crossings, to ensure public safety and minimize disruption to traffic.[24] According to TransCanada, only eight gravel roads and no paved roads (of more than 175 road crossings) would be closed and detoured for up to 48 hours each during the two years of construction.[47]

Impacts associated with constructing the pipeline across roads would be temporary and minor and would not be expected to create significant disruptions to traffic. TransCanada would be required to obtain all state and local permits necessary to cross roads with the pipeline. It would be the responsibility of the state or local permitting authority to ensure that traffic flow would not be significantly impacted by road closures and that affected roads

are restored to preconstruction conditions or better after construction. However, in the interest of public safety, we recommend that:

- **TransCanada coordinate road closures with state and local emergency responders (law enforcement, fire, and medical) and provide sufficient advance notice of road closures to appropriate response agencies.**

In addition to disrupting traffic flow, the movement of construction equipment, materials, and crew members to the project area could result in deteriorated roadbed conditions. During construction, trucks and buses hauling heavy equipment, materials, and personnel to the project site could damage the roadbeds. Every axle passing over a highway consumes a portion of the pavement's life. With each application of load, the pavement experiences compression and bending that eventually lead to rutting and cracking. Road tests over the past 50 years have shown that the amount of pavement life consumed by heavy axles greatly exceeds the amount of life consumed by light axles. For example, a 20,000-pound truck axle consumes 1,000 times as much pavement life as a 2,000-pound automobile axle even though the axle weight is only 10 times as large.[48]

Because of the importance of trucking to South Dakota's economy, the South Dakota legislature and other branches of state government have historically adopted rules and procedures that help the trucking industry to operate competitively. Unlike most states, South Dakota does not impose absolute gross weight limits on trucks. Instead, it allows essentially unlimited gross weight, provided the load is supported by enough tires and axles to prevent road and bridge damage. The Department of Transportation has also developed an automated permitting system that allows truckers to obtain permits online and quickly identifies safe routes for movement of oversize and overweight vehicles.[46]

Paved roads are the most durable and stand up well to periodic surges in traffic and heavy use. Paved roads may or may not require periodic maintenance as a result of construction traffic. Gravel roads, on the other hand, are much less durable and almost certainly would require repair. TransCanada estimates that up to 350 miles of gravel roads may need grading or gravel replenishment during construction at a cost of up to $1.4 million.[47] We recommend that:

- **TransCanada implement a regular program of road maintenance and repair throughout active construction to keep paved and gravel roads in an acceptable condition for travel by the public. Following construction, TransCanada would be responsible for restoring deterioration caused by**

construction traffic such that the road is returned to its preconstruction condition or better. Repairs during and after construction would be consistent with federal, state, and local requirements.

The project also could result in other types of damage to roads. For example, roads could be damaged by tracked vehicles crossing the roads as they move down the construction right-of-way. Heavy equipment also could track dirt and mud on roads, which may cause slippery and dangerous road conditions to road users. To minimize these potential problems, we recommend that:

- **TransCanada use rubber mats, tires, plywood sheets, steel plates or similar material to prevent damage to the road surface where tracked vehicles cross paved roads, and TransCanada install a combination of matting, culverts, and/or 50-foot-long crushed stone access pads at road crossings and other ingress and egress points to construction work areas to allow mud to fall off construction-related vehicles prior to leaving the work area. If excess soil or mud is tracked onto roadways, it should be shoveled or swept off immediately.**

Nearly all funds to repair state and county roads in South Dakota come from road users in the form of motor fuel taxes, motor vehicle registration fees, and compensatory fees paid by commercial carriers. Commercial carriers need registrations to operate in the state and may need special permits for oversize and overweight vehicles, temporary trip permits within the state, or to haul hazardous materials. In theory, the fuel taxes, registrations, and permits required to operate trucks hauling heavy equipment and materials to and from the project area would pay for maintenance of the roads. South Dakota law, however, requires and indemnity bond for projects such as this to insure that any damage beyond normal wear to public roads, highways, bridges, or other related facilities would be adequately compensated.[49] TransCanada has proposed a $3 million bond in 2008 when one construction spread is active, and a $12 million bond in 2009 when two spreads are active.[47] The cumulative bond amount is about 12 times the estimated cost of repairs/maintenance. We recommend that:

- **TransCanada obtain a bond in the amount of $3 million in 2008 and $12 million in 2009 to insure that any damage beyond normal wear to public roads, highways, bridges, or other related facilities would be adequately compensated. If project plans change such that a different bonding amount is warranted (e.g., the construction schedule or spread lengths change), TransCanada would be required to inform the South Dakota**

Public Utilities Commission of such changes and propose a different bonding amount for commission review and approval.

Taxes

As of 2005, South Dakota had the lowest per capita total state tax rate in the United States. The state does not levy inheritance tax, personal or corporate income tax, or tax on intangible personal property. However, sales tax is applied to the gross receipts of all retail sales in South Dakota, including the selling, leasing, and renting of tangible personal property or the sale of services. A use tax of the same rate as the sales tax applies to all goods and services that are used, stored, or consumed in South Dakota on which South Dakota sales tax was not paid. The purchaser or consumer of the goods or services is responsible for reporting and remitting the use tax in the filing period in which they receive the goods or services. The state sales and use tax rate is 4%.[50]

In addition to state sales and use tax, municipalities may impose sales and use tax of up to 2% and gross receipts tax of up to 1%.[50] Within the project area, the proposed project avoids municipalities (except perhaps for a small corner of Yankton), which is consistent with the general pipeline routing goal of avoiding populated areas. South Dakota also imposes a contractors' excise tax on the gross receipts resulting from construction services or realty improvements. The contractors' excise tax is 2%.[51]

The proposed project would be subject to 4% sales and use tax and 2% contractors' excise tax, for a total of 6% tax. TransCanada estimates the taxable value of the project in South Dakota at $300 million.[30] The taxable value of the project is higher than the total cost of purchases from firms located within the region. This is due to the fact that items purchased outside of South Dakota, but used in South Dakota (*e.g.*, pipe, pump motors, *etc.*) are subject to use tax. Based on the taxable value of the project in South Dakota, the state would collect about $18 million from construction. Compared to statewide sales and use tax and contractors' excise tax collected in 2006 of about $926 million, the proposed project would have a modest benefit on state tax revenues of about 2%.[52] Spread over two years, the benefits would be less noticeable.

New and expanded business facilities (with the exception of retail, housing, and health care facilities and any facility that is exempt from property tax) may be eligible for partial sales and use tax and contractors' excise tax refund if project

costs are greater than $10 million. Refunds are based on the following project cost scale:[53]

- $0 to $10 million = 0%
- $10 to $15 million = 25%
- $15 to $20 million = 33%
- $20 to $40 million = 50%
- $40 to $60 million = 67%
- $60 to $600 million = 75%
- $600 million and up = 90%

In accordance with the value of the project in South Dakota, TransCanada may be eligible for up to a 75% refund, thereby effectively dropping the cumulative sales and use tax and contractors' excise tax rate to 1.5%, or $4.5 million. Compared to the statewide taxes collected in 2006 of about $926 million, the proposed project would have a minor benefit on tax revenues of about 0.5%.[52] Spread over two years, the benefit would appear still less significant.

During operation, crude oil shipped in the pipeline would not be retailed within the state; therefore, no sales or use tax would be generated by the product in the pipeline. However, the electricity (as well as other goods and services) purchased by TransCanada would be subject to a 4% sales and use tax. TransCanada estimates that it would purchase about $10.1 million in local electricity annually to operate its pump stations in South Dakota.[22] This equates to $404,000 of annual tax revenue. Other goods and services purchased locally might exceed $500,000 annually and could add more than $20,000 to annual tax revenue.[20, 22]

The state also taxes the operation of pipelines (as well as railroads, airlines, and public utilities). Pipelines are taxed via *ad valorem* property tax, which is a tax based on the assessed value of the pipeline. The phrase *ad valorem* is Latin for "according to value." *Ad valorem* taxes such as this are incurred through ownership of an asset, and contrast to transactional taxes such as sales taxes, which are incurred only at the time of transaction.[54, 55]

The South Dakota Department of Revenue and Regulation is responsible for assessing the property of pipeline companies operating as a common carrier in South Dakota. The operating property is assessed by the Department and sent to the counties for collection at the county tax rate. Property taxes are the primary source of funding for school systems, counties, municipalities and other units of local government. The state does not collect or spend any property tax money. Each county administers its own property tax system; the state's authority is limited to assisting local governments in making property tax assessments that are fair and in compliance with the law.[52]

The property tax rate charged in South Dakota varies by property type, by county, and by year. The rate for a county is established each year by dividing the value of all the property in the county into the annual budget that is unfunded from other sources. The average county property tax rate applied to pipelines in South Dakota in 2006 was around 2.1%.[52, 56]

Assuming that the value of the pipeline system would be roughly equivalent to the cost of construction, the proposed pipeline would have a total taxable value of about $300 million. The construction cost initially provides the basis for the pipeline valuation. With time, the assessment would focus onto the line's contribution to system-wide income and depreciated value. Generally, the assessment would decrease over time. As a rule, counties where the pipeline occupies more land would account for a proportionally larger part of the total taxable value. Also, counties with the pump stations would account for a larger part of the total taxable value. *Ad valorem* property taxes associated with the proposed project would increase countywide tax revenue between 2.6% and 13.7%. This additional revenue would be a noticeable tax benefit associated with operation of the pipeline. Table 7 provides the estimated initial taxable value of the pipeline system by county and anticipated annual tax revenues.

The electric transmission lines associated with the proposed project also would be assessed *ad valorem* property tax. Electric transmission lines, however, only pay *ad valorem* property tax on real property (*i.e.*, land and buildings). Personal property, which includes all wires, lines transformers, meters, machinery, fixtures, and all attachments and appurtenances, is subject to a 2% gross receipts tax in lieu of property tax.[57] For the purpose of this assessment, it was assumed that no additional real property would be required for the electric transmission lines and all taxes would be gross receipts taxes. Assuming gross receipts make up 50% of the total construction costs, gross receipts tax revenue of $282,000 would be shared among the six counties where the electric transmission lines would be

installed (Beadle, Day, Hanson, Miner, and Yankton counties, and Brown County, which is not crossed by the pipeline).

Table 7: Annual Property Tax Impacts associated with the Keystone Pipeline Project

County Name	Total Taxable Property in County in 2006 ($)	Estimated Pipeline Taxable Value ($)	Estimated Total Tax Revenue of Pipeline ($)*	Estimated Tax Revenue Increase**
Beadle	917,499,593	34,767,548	730,119	3.8%
Clark	369,149,435	43,609,845	915,807	11.8%
Day	423,534,569	46,262,534	971,513	10.9%
Hanson	285,151,454	16,590,702	348,405	5.8%
Hutchinson	652,266,928	38,322,698	804,777	5.9%
Kingsbury	383,199,888	12,324,521	258,815	3.2%
Marshall	380,868,752	29,152,233	612,197	7.7%
McCook	527,090,155	13,509,572	283,701	2.6%
Miner	287,141,204	39,270,738	824,686	13.7%
Yankton	1,027,001,569	26,189,608	549,982	2.6%
Statewide	47,602,363,296	300,000,000	6,300,000	0.6%

*Based on a 2.1% property tax rate.
**Based on taxable property values for both the pipeline and electric transmission line.
Source: 56

Indirect and induced spending associated with construction and operation also would generate tax revenue for the state and local governments, primarily through sales and use tax. A comparison between gross sales and taxable sales in South Dakota over the past five years suggests that about 33% of all sales are taxable. Besides sales and use tax, numerous other types of state taxation would be levied, such as a 1% tourism tax on hotels where non-local workers would stay. As a simple approach to estimating indirect and induced tax revenues, a 4% sales tax was applied to 33% of the indirect and induced expenditures associated with construction and operation. Additionally, a 1% tourism tax was added to those expenditures associated with the accommodation and food services industries. Based on this approach, indirect and induced spending would generate about an additional $2.6 million in tax revenue during construction and $146,000 in annual tax revenue during operation. Again, we note that the accommodation and food services industries taxes may be impacted to a greater extent than predicted here due to targeted demands from the influx of non-local workers during construction.

Conclusion

The proposed project would have both beneficial and adverse impacts on the socioeconomic conditions of the counties crossed by the pipeline as well as South Dakota in general. Most of the impacts would be insignificant. Those

adverse impacts that have potential to be significant could be mitigated by following the recommendations identified in this assessment. With the recommended mitigation, the proposed project would not, from a socioeconomic standpoint:

1. pose a threat of serious injury to the socioeconomic conditions in the project area,
2. substantially impair the health, safety, or welfare of the inhabitants in the project area, or
3. unduly interfere with the orderly development of the region.

TransCanada would be required to comply with all applicable laws and rules during construction and operation of the pipeline.

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